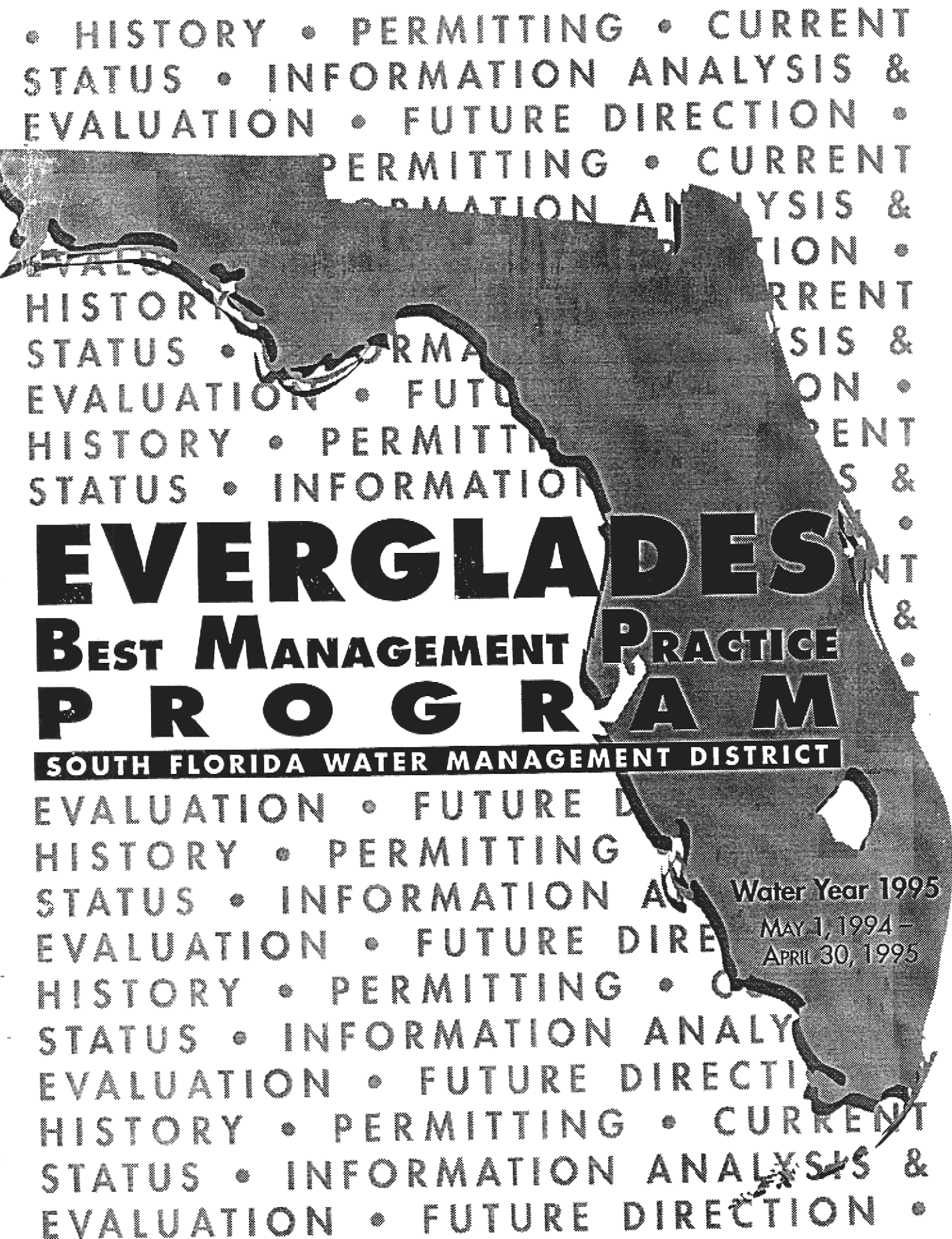
• HISTORY • PERMITTING • CURRENT
STATUS • INFORMATION ANALYSIS &
EVALUATION • FUTURE DIRECTION •
EVERGLADES
BEST MANAGEMENT PRACTICE
PROGRAM
SOUTH FLORIDA WATER MANAGEMENT DISTRICT
Water Year 1995
MAY 1, 1994 –
APRIL 30, 1995

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CHAPTER I. BACKGROUND

Summary

While restoration of the Everglades involves several individual programs with various objectives, the Everglades Forever Act (373.4592, Florida Statutes) recognizes one of the cornerstones to improvement in the long-term ecological health of the Everglades is dependent on a strong and effective regulatory permitting program. Regulatory or permitting programs address issues at the source rather than downstream. The purpose of this report is to provide an annual update and status report on the Everglades Regulatory Programs. This report describes an overview of the history and components of the Everglades Regulatory Programs, current status, information analysis & evaluation, and future direction.

The ultimate purpose of the Everglades Regulatory Programs is to reduce total phosphorus discharged through surface water runoff to the Everglades. The goal of the Everglades Regulatory Program for the Everglades Agricultural Area (EAA) Basin is a 25% annual total phosphorus reduction as compared to a base period (1979-1988). The phosphorus reduction is to be accomplished by the landowners within the EAA implementing on-farm best management practices (BMPs). Although the first year of compliance for the EAA Basin program does not occur until May 1995 through April 1996, total phosphorus reduction measurements have been conducted and reported over the past several years to provide an on-going reporting system during the initial BMP implementation period. The EAA basin monitoring has shown an average annual 30% + total phosphorus reduction over the past 4 years (**Figure 1**).

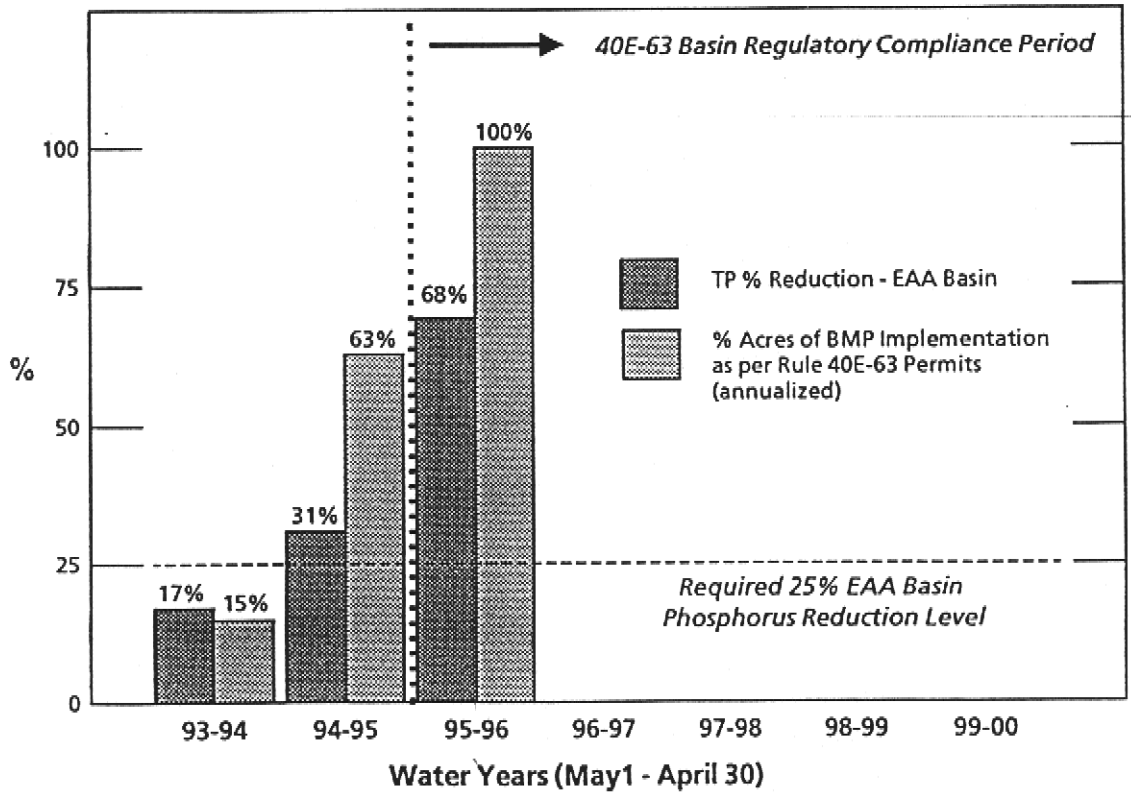


Figure 1. Summary of the Everglades Regulatory Program EAA Basin Performance

History of the Everglades Regulation Program for the EAA

In 1987, the state enacted the Surface Water Improvement and Management, or SWIM Act. The SWIM Act required Florida's water management districts to develop plans which contain strategies to either protect undisturbed "natural" water bodies or restore impacted areas. The Everglades SWIM plan was the fourth plan developed by the SFWMD. In 1991, the Florida legislature passed the Everglades Protection Act which further defined the requirements of the Everglades SWIM Plan. The Everglades Protection Act was revised and "strengthened" during the 1994 Florida legislative session. The resulting act, renamed the Everglades Forever Act (EFA), replaced the Everglades SWIM Plan and mandated a comprehensive Everglades Restoration Program.

The Everglades Restoration Program undertaken by the SFWMD is based upon a comprehensive approach to restoration and protection by proposing strategies for improving water quantity, timing, and distribution deliveries (hydroperiod), improving water quality in tributary water, and long-term removal and management of exotic species. The Everglades program is arguably the most publicly discussed and debated effort the SFWMD has undertaken in recent years. One of the most visible points surrounding the Everglades restoration initiative, is to what extent are the Everglades' impacts due to changes in hydroperiod versus changes in water quality. Although this discussion continues, the SFWMD has proceeded with efforts intended to begin improving tributary hydroperiod and water quality. One such undertaking is the Everglades Regulatory Program. The regulatory programs are the cornerstone of the overall Everglades restoration initiative since they address issues at the source rather than downstream.

The largest tributary to the Everglades is the Everglades Agricultural Area or EAA (**Figure 2**). The EAA is 718,400 acres of highly productive agricultural land comprised of rich organic (muck) soils located between Lake Okeechobee to the north and the Everglades to the south. Draining the area now known as the EAA began as a federal government project during the early 1900's in an effort to promote agricultural development and urban settlement of the sparsely populated south Florida peninsula. Today, 553,000 acres within the EAA are tributary to the northern Everglades (drainage from the remaining 165,400 acres discharges north into Lake Okeechobee). The EAA is comprised of approximately 505,000 acres of agricultural production: 82% sugar cane, 9% vegetables, 6% sod, 2% livestock, 1% rice and other crops. The remaining 48,000 acres are urban areas, roadways, canals and levees, and other land uses.

The central drainage system for this region consists of five major canals and six large pump stations operated by the SFWMD. Farm-level water management is controlled by privately owned and operated water control structures which are authorized to connect to the SFWMD primary canals. The over 300 private water control structures range from gated culverts to 200,000 gpm pump stations (**Figure 3**).

During 1991 and 1992 the SFWMD developed the EAA Regulatory Program as directed by the Everglades Protection Act. The regulatory program was developed through a series of public workshops and round-table discussions. The year-long effort resulted in Chapter 40E-63, Florida Administrative Code (F.A.C.) which describes the intent, requirements, and compliance of the EAA Regulatory Program.

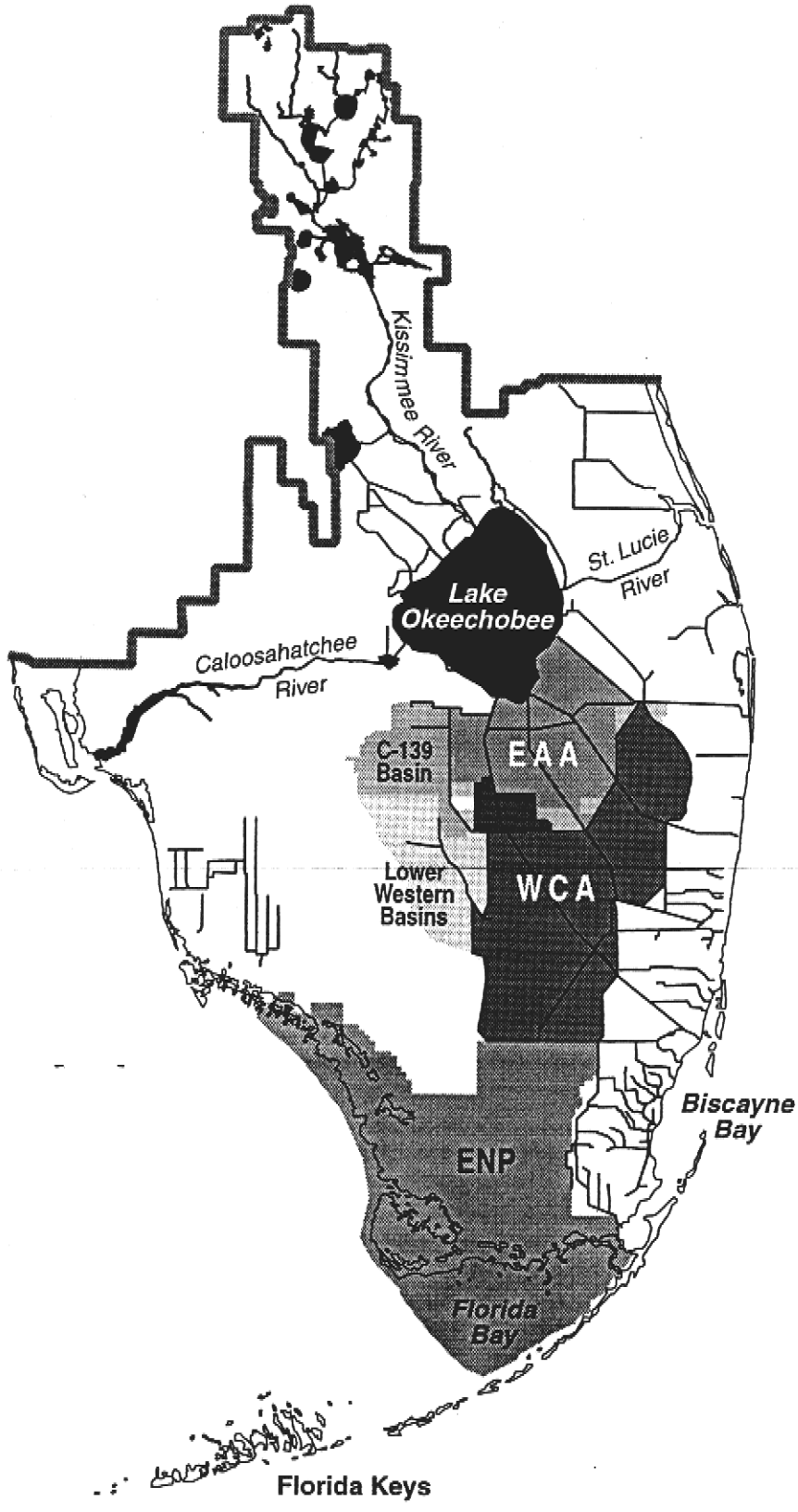
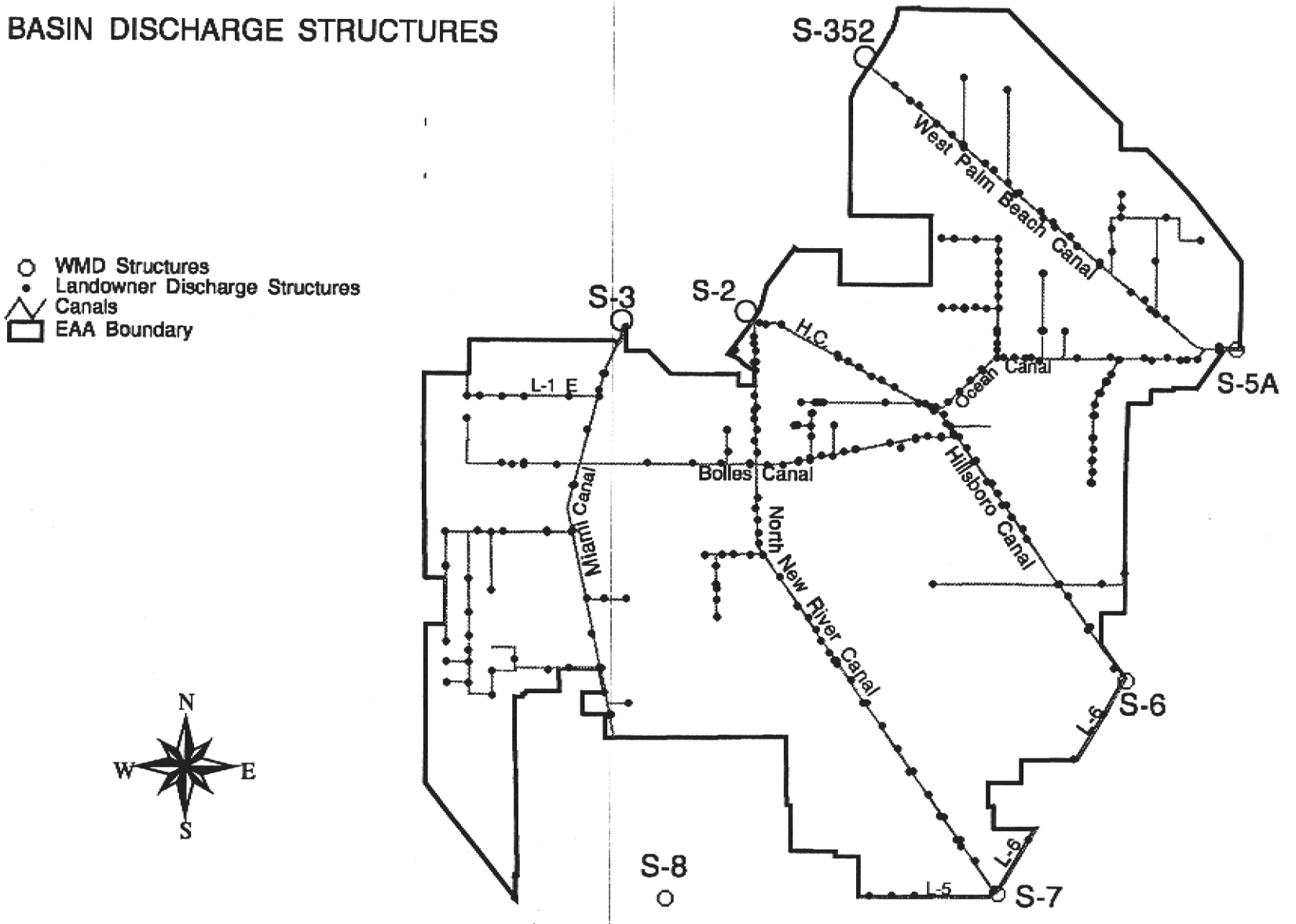


Figure 2. Tributary Basins to the Everglades

BASIN DISCHARGE STRUCTURES



The EAA Regulatory Program is unique in that its goal is to achieve a 25 percent reduction in phosphorus for the entire EAA basin -- not for each individual farm. The SFWMD will determine if a 25 percent overall reduction has occurred by comparing phosphorus discharges for future 12-month periods with a base 10-year period of record from 1979 through 1988. The first annual compliance period will be May 1, 1995 through April 30, 1996.

In the event that the 25% annual basin reductions are not met, then additional on-farm BMPs will be required. During the 40E-63 rule development process, much discussion was spent on the determination of which farms would implement additional BMPs if the 25% basin compliance was not met. The SFWMD initially proposed that all farms would be treated equally: equalling sharing the credit for reductions as well as equally sharing the responsibilities for not meeting the basin target. Several landowners represented at the rule development workshops preferred to be able to demonstrate phosphorus levels discharged from individual properties. In doing so, it was felt that farms which were contributing the highest phosphorus levels to the Everglades should be identified and thus targeted to implement additional BMPs in contrast to requiring all areas to comply with this requirement. As a result, Chapter 40E-63, F.A.C., requires water quality monitoring to be conducted for each farm. However, this water quality monitoring will only be used for permit compliance if the basin 25% target is not achieved. In the event that the 25% target is not achieved, the farms with the highest measured unit area phosphorus discharged (lbs/acre), would be identified and targeted for implementation of additional BMPs. This phased approach would continue until the EAA basin again meets the annual 25% phosphorus reduction target level.

Some landowner representatives were additionally concerned that some farms may be unfairly penalized, even with the on-farm water quality monitoring. The most common example cited was that of a vegetable farm. A vegetable farm may initially demonstrate a higher unit area phosphorus discharge, theoretically reduce annual phosphorus by 50%, and still be identified as one of the highest phosphorus dischargers on a unit area basis. The result was development of the "Early Baseline" program (a more apt name would be the "On-Farm Baseline" program). This voluntary option allowed permittees to develop a one year, permit area specific baseline, by which future compliance may be measured. The one year baseline was established from May 1, 1993 to April 30, 1994 (WY94). Similar to the general permitting program described above, these on-farm baselines will only be used to determined individual permit compliance if the basin 25% target is not achieved. In the event that the basin 25% target is not met, the Early Baseline permits which demonstrated at least a 25%, permit specific phosphorus reduction for the year in question, will not be required to implement any additional BMPs regardless of their overall ranking. However, the Early Baseline permits which are not able to demonstrate at least a 25% permit specific phosphorus reduction for the year in question, will be excluded from further participation in the Early Baseline program and will be ranked with the other non-early baseline permits to determine implementation of additional BMPs as described above.

As a cost of admittance to the Early Baseline program, permittees were required to implement water quality monitoring and BMPs at least one year in advance of all other permittees. All other implementation and reporting requirements were equal. Forty-five percent (45%) of permittees, representing forty-four percent (44%) of the basin acreage, opted to participate in the Early Baseline option (**Table 1**). **Figure 4** illustrates the spatial distribution of Early Baseline and standard type permits.

Table 1. Monitoring and Baseline Summary for Structures

	EARLY BASELINE	NON-EARLY BASELINE	TOTAL
Number of Permits	38	44	82
Number of Basins	95	124	219
Number of Structures:			
Quality and Quantity Monitoring	113	67	180
Quantity Monitoring Only	12	74	86
Upstream	4	37	41
TOTALS	129	178	307

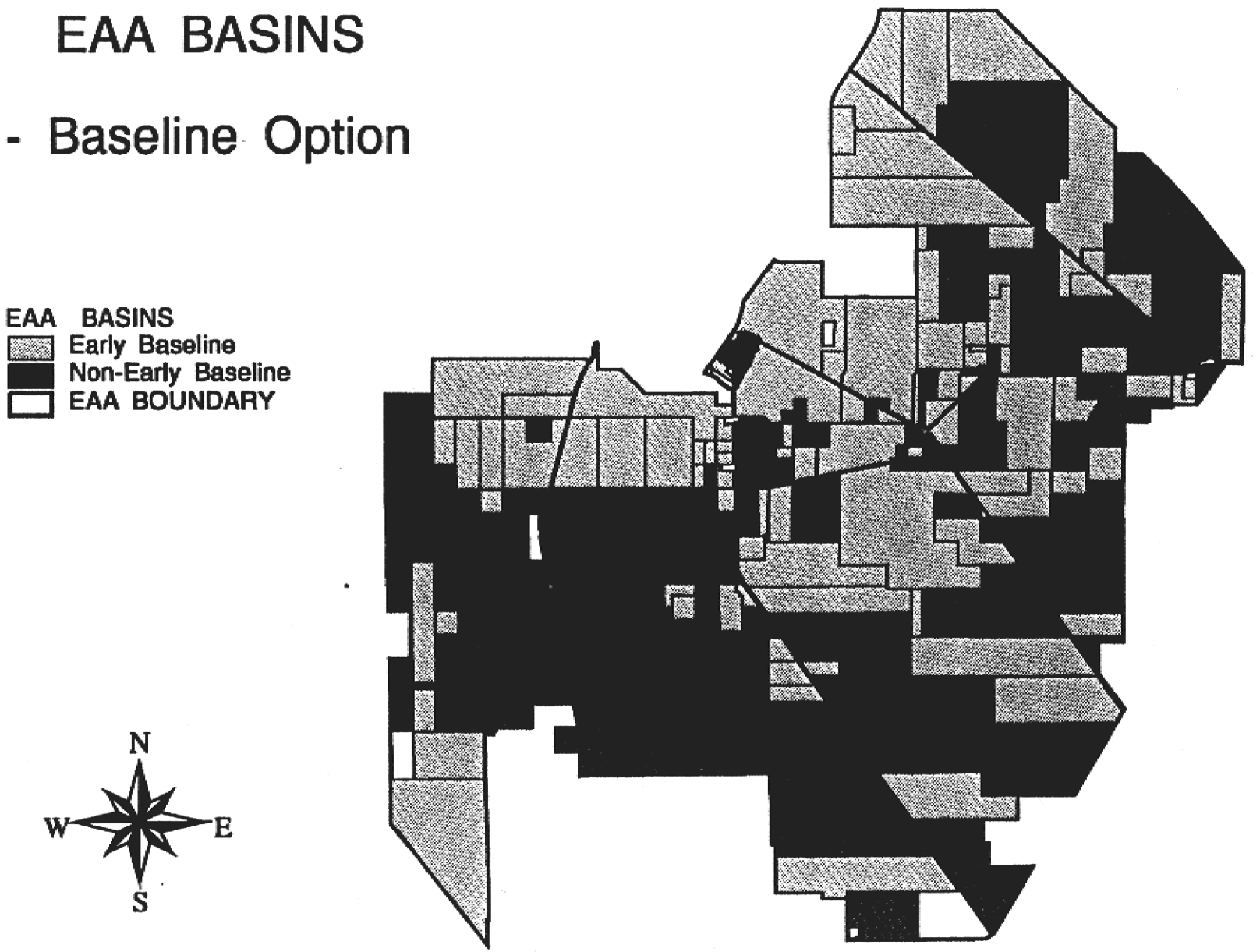


Figure 4. Spatial Location of Early and Non-Early Baseline Permit Boundaries

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CHAPTER II. PERMITTING

Description of Permit Requirements

Rule 40E-63 states that owners/operators of the private water control structures and owners/lessees of land served by the structures within the EAA were to apply for permits. 40E-63 required each permit application to contain (a) a BMP plan and (b) a water quality monitoring plan. The minimum requirements and review process for these plans are discussed below. 40E-63 set several milestones as follows:

January 1, 1993	Begin Early Baseline water quality monitoring
July 1993	Governing Board final action on permit applications
October 1993	Begin Non-Early Baseline water quality monitoring
January 1, 1994	Complete BMP implementation for Early Baseline Farms
January 1, 1995	Complete BMP implementation for Non-Early Baseline Farms
May 1, 1995-April 1, 1996	First annual 25% basin reduction compliance determination

Currently, a total of 82 permits covering 502,194 acres have been issued (**Table 2**). These permits represent 100% of the EAA regulated area.

Table 2. Permits and Permit Modifications Issued

	9/92 - 4/93	5/93 - 4/94	5/94 - 4/95	TOTAL
Permits:				
Number of Applications	79	1	2	82
Number of Permits Issued	5	75	2	82
(Non-Early Baseline)	(5)	(37)	(2)	(44)
(Early Baseline)	(0)	(38)	(0)	(38)
Number of Permits Denied	0	0	0	0
Modifications:				
Number of Applications:				
Staff (Letter Mods/Transfers)	0	1.	1	2
Governing Board (Full Mods)	0	0	3	3
Modifications Issued:				
Staff (Letter Mods/Transfers)	0	1	1	2
Governing Board (Full Mods)	0	0	3	3
Modifications Denied:				
Staff (Letter Mods/Transfers)	0	0	0	0
Governing Board (Full Mods)	0	0	0	0

As part of each permit application, the landowner was required to submit a proposed plan of on-site BMPs -- operational programs or physical enhancements designed to reduce phosphorus leaving their property.

The SFWMD was faced with the tasks of (a) establishing a base level of BMPs for each permit area and (b) ensuring consistency with BMP plans between different landowners. To accomplish both of these tasks a system of BMP "equivalents" was developed. The intent was to assign "points" to BMPs within three basic categories: fertilizer techniques, water management, and sediment control (**Table 3**). Some BMP research has been conducted within the EAA region, however no specific phosphorus reduction levels have been quantified for individual BMPs. The BMP list and points assigned to each BMP were based upon best professional judgment of SFWMD staff.

Twenty-five BMP "equivalents" or "points" was set as the minimum target BMP level. Utilizing the BMP "equivalents" approach allowed flexibility of each landowner to develop a BMP plan which was best suited for site specific geographic and crop conditions. **Table 4** presents an example which compares "BMP equivalent" plans for four different farms. Although, each farm had different crops, soil types, and drainage capacities, equivalent BMP plans were developed and accepted.

Table 3. Best Management Practices Summary and "BMP Equivalent" Points

BMP	*DESCRIPTION*	*PTS*
WATER DETENTION 0.5 Inches Detained 1.0 Inches Detained 1.5 Inches Detained	- increased detention in canals, field ditches, soil profile, fallow fields, aquatic cover crop fields, prolonged crop flooding; - measured on an annual average basis - rainfall vs. runoff	 5 10 15
BASIC FERTILIZER Soil Testing Fertilizer Maintenance	 - avoid excess application by determining P levels needed - spill & misapplication prevention (i.e. ditches, canals)	5
ADVANCED FERTILIZER Banding vs. Broadcast	 - avoid excess fertilizer by direct application to root zone	5
Split Application	- apply small P portions at various times during the growing season vs entire application at beginning to prevent excess P from washing into canals	5
Reduced P Fertilizer	- apply fertilizer with reduced P content	$2^1/_2$
Cane Leaf Analysis	- avoid excess application by determining P levels needed	$2^1/_2$
Slow Release	- avoid flushing excess P from soil by using specially treated fertilizer which breaks down slowly thus releasing P to the plant over time	5
BASIC SEDIMENT 2 Field & 2 Canal BMPs	Field Sediment Control BMPs • leveling fields • cover crops • veg. on ditch banks • ditch bank berm • raised culvert bottoms • drainage sump in field ditches • slow field ditch drainage near pumps • other proposed by permittee Canal Sediment Control BMPs • sediment trap in canal • strong canal cleaning program • sump upstream of drainage pump intake • other proposed by permittee	5
ADVANCED SEDIMENT 4 Field & 2 Canal BMPs	 see list above	10
OTHER Pasture Management	 reduce cattle waste nutrients in surface water runoff by "hot spot" fencing, provide watering holes, low cattle density, provide shade, pasture rotation, feed & supplement rotation, etc.	5
Improve Infrastructure	uniform drainage by increased on-farm control structures	5
Urban Xeriscape	lower runoff & P by using plants that require less of each	5
Det. Pond Littoral Zone	vegetative filtering area for property stormwater runoff	5
Other BMP Proposed	proposed by permittee and accepted by SFWMD	TBD

FARM 'A' *(Sugar Cane, deep soils)*	
BMP	***Points***
WATER DETENTION	
1.5 Inches Detained	15
BASE FERTILIZER	
Soil Testing	2½
Fertilizer Maintenance	2½
ADVANCED FERTILIZER	
Banding	5
TOTAL	25

FARM 'B' *(Sugar Cane & Vegetables, medium soils)*	
BMP	***Points***
WATER DETENTION	
1.0 Inches Detained	10
BASE FERTILIZER	
Soil Testing	2½
Fertilizer Maintenance	2½
ADVANCED FERTILIZER	
Banding	5
SEDIMENT CONTROL	
2 "Field" & 2 "Canal" BMPs	5
TOTAL	25

FARM 'C' *(Sod, medium soils)*	
BMP	***Points***
WATER DETENTION	
1.0 Inches Detained	10
BASE FERTILIZER	
Soil Testing	2½
Fertilizer Maintenance	2½
SEDIMENT CONTROL	
4 "Field" & 2 "Canal" BMPs	10
TOTAL	25

FARM 'D' *(Citrus, shallow soils)*	
BMP	***Points***
WATER DETENTION	
0.5 Inches Detained	5
BASE FERTILIZER	
Soil Testing	2½
Fertilizer Maintenance	2½
SEDIMENT CONTROL	
2 "Field" & 2 "Canal" BMPs	5
OTHER	
Infrastructure Improvements	5
Low volume drip irrigation	5
TOTAL	25

Table 4. Example of "BMP Equivalent" Plans for Four Different Farms

Water Quality Monitoring Plans

The 40E-63 water quality monitoring is being conducted at two levels: (1) EAA basin-level by the SFWMD and (2) farm-level permittee monitoring of private water control structures within the EAA.

The primary means to determine the 40E-63 program success is through analysis of water quality monitoring conducted at the EAA basin-level by the SFWMD. Total phosphorus and flow measurements have been recorded at pump stations S-5A, S-6, S-7, and S-8 (**Figure 3**) for over 20 years. Primary compliance for all permits collectively is determined by the phosphorus levels measured at these pump stations.

The secondary method of compliance determination is through farm-level water quality monitoring. Permit applications were required to contain a water quality monitoring plan. The farm-level monitoring plans consist of flow measurements, collection and composite of farm discharge water samples, and analysis for total phosphorus within a maximum time frame.

The permittee has options for flow measurement determination as discussed further under Chapter III of this report. Calibrated flow measurements require certification by a registered professional engineer and review and acceptance by the SFWMD. Exceptions to a certified pump calibration report were allowed for small landowners under 320 acres. These landowners were allowed to use the pump manufacturer's rated capacity and operation time log to estimate flow.

Water quality samples are required to be collected by automatic samplers. Exceptions to automatic samplers were allowed for small landowners under 320 acres. These landowners are allowed to take daily grab samples over a two-week composite period. For landowners having greater than 320 acres, Rule 40E-63 required water quality samples to be collected in a flow-proportional/flow-weighted manner. However, a less expensive alternative, time-proportional/time-weighted automatic sampling, was requested by the permittees. Allowance of time-proportional sampling required a research study to be conducted by the permittees (collectively) to determine the conversion factor (if any) to adjust time-proportional values to flow-proportional values. The permittees who selected time-proportional sampling are bound by the research study results. All applicable data, that were collected in a manner consistent with sample collection techniques being utilized within the EAA, have been reviewed. The study results did not identify a statistical difference between time-proportional and flow-proportional sampling methods.

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CHAPTER III. POST PERMIT COMPLIANCE

BMP Annual Reports

According to Rule 40E-63, each permittee is required to submit BMP implementation summary reports. Each report contains a summary of all required activities that included BMP installation and BMP operation activities. The first report was due November 1, 1993; subsequent reports were due July 1, 1994, and January 1, 1995. Reports are required to be submitted every year thereafter.

The following table provides a summary of BMP reports submitted between November 1, 1993 and January 1, 1995.

Table 5. BMP Annual Reports

BMP ANNUAL REPORT DUE DATE	NO. OF FARMS REQUIRED TO SUBMIT REPORTS	NO. OF REPORTS RECEIVED	REPORTS REQUIRING FOLLOW-UP	REPORTS OUTSTANDING INCOMPLETE OR MISSING
November 1, 1993	362	320	0	42
July 1, 1994	362	334	10	37
January 1, 1995	362	357	1	5

BMP Site Verifications

The South Florida Water Management District's Everglades Regulation Section staff conducts BMP site inspections to verify farm-level compliance. Staff has developed procedures for and initiated BMP field verifications to ensure that the BMPs as approved by permit and reported in BMP annual reports have been implemented. Sites to be inspected may be chosen randomly and conducted on an annual basis or specifically identified based on submitted water quality data outliers. BMP field inspections were conducted on 47 of the total 362 farms to date (**Figure 5**).

Site verification procedures begin with generating a BMP checklist from the District's permit database. The inspector's checklist consists of all BMPs selected by the permittee to be implemented. The checklist is mailed to the permittee prior to the verification to assist the landowner in preparing his documentation for the inspection. The inspections involve a combination of visual field observations and a review of office records. During the office review the inspector focuses on records that document soil test results, fertilizer recommendations and applications, BMP training of farm personnel, pump logs and any other material that supports BMP implementation. While in the field, inspectors note any visual evidence that the selected BMPs have been implemented. This evidence may range from spoil on canal banks indicating canal cleaning was performed, fertilizer banding or land leveling equipment operating, and maintenance of vegetation on ditch banks to reduce sedimentation, to any other observable evidence that supports BMP implementation.

Inspections allow District staff to work with the permittees by discussing BMP strategies and communicating areas of concern. The BMP site inspections conducted thus far indicate that the permittees have implemented their respective BMP plans and are taking a proactive approach to reviewing and improving their plans where possible.

EAA BASINS

- BMP Site Inspections

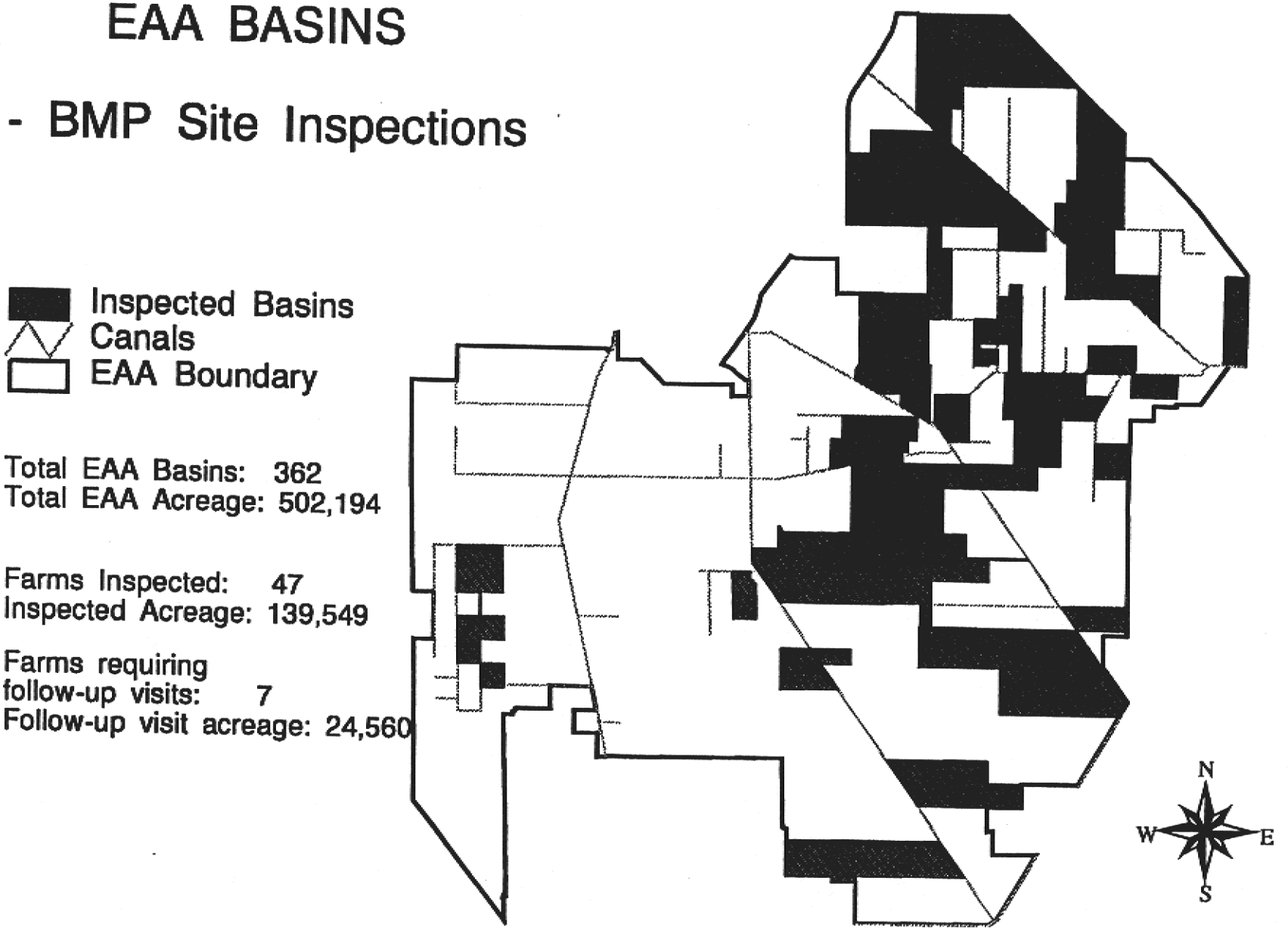

Figure 5. BMP Site Inspections Conducted

Rule 40E-63.136(2)(c)(9), requires the structure calibration methodology and the results of the calibration methodology to be certified by a Florida registered Professional Engineer. Each calibration report shall contain at a minimum, methodology, instrumentation, procedures, data collected, operational information needed to determine flow, and final calculations to be applied to determine flow. Each calibration shall cover the normal operating ranges of pump speed and head differentials. The calibration report shall also contain a temporary backup methodology to be utilized if the primary flow measurement equipment becomes inoperable for any reason.

Even though calibrated flow measurements require certification by a Florida registered Professional Engineer and review and acceptance by the SFWMD, the permittee has options for flow measurement determination. Water discharge structures included gravity connections (culverts, weirs, bleeders, channels) and pump stations. Structure calibrations involve two processes, (1) data collection methodology and (2) data manipulation to derive a discharge equation. A variety of data collection methods were employed and accepted, such as pitot tube, doppler, stream gaging and dye fluorometry. Some methods were more applicable in certain situations than others due to canal configuration, structure capacity, structure layout/design, etc. Data points obtained were required to cover the normal operating ranges (head differential and speed) of the structure. Linear, parabolic and cubic were some of the types of discharge equations developed from manipulating the calibration data points. Final flows are determined from these discharge equations which utilize static head differentials and pump speed (where appropriate) as variables.

Exceptions to a certified structure calibration included landowners with less than 320 acres with small capacity discharge structures. These landowners were allowed to use the pump manufacturer's rated capacity and an operation time log to calculate flow. Additionally, other structures that are upstream of a final flow monitoring point into a works of the district canal were not required to submit a structure calibration.

Re-calibration of structures is necessary if a change has occurred that has affected the quantity of water being discharged.

The following table provides a summary of structure calibrations.

Table 6. Summary of Structure Calibrations

NUMBER OF STRUCTURES	STRUCTURE TYPE		TOTAL
	GRAVITY	PUMP	
REQUIRING CALIBRATION	8	254	262
USING RATED CAPACITY	N/A	7	7
WITH OUTSTANDING CALIBRATIONS AS OF 4/30/95	0	21	21
WITH RE-CALIBRATIONS SUBMITTED AS OF 4/30/95	2	48	50

Permit conditions require permittees to submit daily total phosphorus and flow data for structures discharging (directly or indirectly) into SFWMD canals. The District has received 182,205 daily records as of April 30, 1995. Some structures are permitted to monitor water quality and flow while others monitor only flow with total phosphorus values from a representative site applied to it. Some structures are non-monitoring (upstream) structures with agreements in place to allow structures downstream to represent them.

Water quality samples are generally collected by automatic samplers and are composited for a sampling period of up to 21 days. The samples are required to be sent to an HRS certified laboratory for total phosphorus analysis. Daily total phosphorus load is calculated by multiplying the phosphorus concentration for the sampling period by each daily flow.

Rule 40E-63 requires data to be submitted in an electronic format. The SFWMD developed a stand-alone software package (written in Clipper®) to assist the permittees in submitting the data in a consistent format. These submittals are required on approximately a monthly basis, with more frequent submittals at the permittee's discretion. The data received to-date is examined on a routine basis, and permittees with structures for which data has not been received within the submittal guidelines, are sent a "reminder" letter that data is past due.

The data received on disk is uploaded into a database using ORACLE® database software. The upload process includes quality control checks which screens for discrepancies such as total phosphorus (TP) analysis beyond the USEPA 28-day holding time limit, incorrect permit number or structure ID, missing information (TP, lab name and/or certification number, etc.) When discrepancies are detected "data flags" are automatically assigned to the sampling period. In some cases, excessive discrepancies may cause the diskette to be rejected and returned to the permittee for resubmittal. Additional screening is done after the data has been successfully uploaded and includes checking for correct application of phosphorus values, sample i.d.'s and analysis dates from water quality sites to flow-only sites as well as looking for data which is "out of the ordinary" based on previous submittals. If necessary, additional "data flags" are assigned to the sampling period. Once the screening is complete, a report is run which identifies permit numbers, structure IDs and sampling periods where "data flags" have been assigned and then generates letters to the permittee outlining the "data flags" and necessary action to be taken (if any).

Table 7. Sampling Periods and Quality Assurance Follow-up

	1/93 - 4/93	5/93 - 4/94	5/94 - 4/95	TOTAL
Number of sampling periods	213	4434	6217	10,864
Number of sampling periods requiring quality assurance follow-up	30 (14.1%)	795 (17.9%)	758 (12.2%)	1583 (14.6%)

Water Quality Monitoring: Annual Reports

Permit conditions require permittees to submit annual water quality monitoring reports to the District. However, as the program evolved, this requirement was reevaluated and it was determined that since the permittees were submitting daily water quality data to the District throughout the year, it was more appropriate that the District send a summary of the year's data back to the permittee for review and correction as necessary. The annual reports summarize the daily flows, phosphorus loads and rainfall where applicable as well as providing a summary of the "data flags" which were assigned throughout the reporting year. The report is used as a tool of communication between the permittee and the District to ensure accuracy of the database and provide assistance in correcting any problems with the monitoring program.

Water Quality Monitoring: Split Sampling

Permittees are required, as part of Rule 40E-63 to monitor offsite water discharge for total phosphorus at approximately 170 monitoring sites located throughout the EAA. A split sample is collected by pouring water collected from an automatic composite sampler into two bottles. Each bottle is sent to a separate laboratory for TP analysis. The purpose for conducting split samples is to test the accuracy of various laboratory analysis techniques. Split samples are collected from the sites by SFWMD staff to check for differences in reported concentration values analyzed by different laboratories and to assure accurate total phosphorus analysis. Sites are selected on a random basis. Split samples were collected at 129 sites during the period covered by this annual report (**Figure 6**). Statistical analysis was conducted on all split samples. Analysis showed no significant difference existed in total phosphorus values from 129 split samples analyzed between the SFWMD lab and five other labs.

If significant differences are found between the SFWMD lab and the permittee's laboratory, the following procedures occur:

1) Invoke follow-up split samples for verification.

2) If the follow-up is still rejected, then:
   a) Examine field sampling technique with QA Audit(s),
   b) Discuss differences with the lab(s), and
   c) Examine data pattern for lab(s) for all permitted sites.

3) Invoke second follow-up splits.

4) If still rejected, disallow lab use for permit program until laboratory satisfies the SFWMD of resolution of differences.

The following table summarizes the number of collected split samples analyzed from January 1, 1993 through April 30, 1995.

Table 8. Summary of Split Samples

	Jan/1/93-April/93	May/93-April/94	May/94-April/95
No. Split Samples	**0**	**24**	**105**
Number Accepted	**0**	**24**	**105**
Number Rejected	**0**	**0**	**0**

Water Quality Monitored Discharge Structures

SPLIT SAMPLING

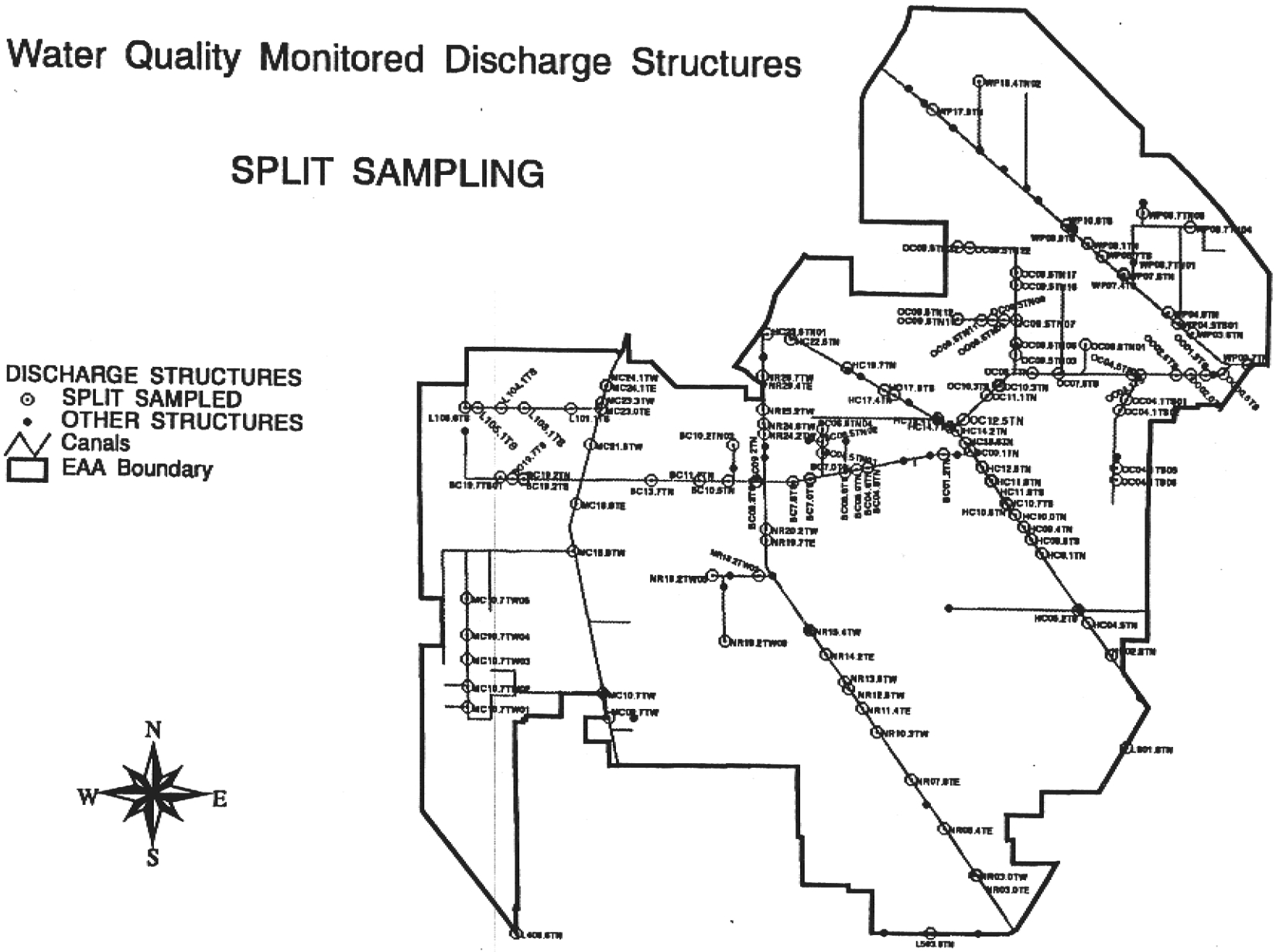

Figure 6. Monitored Discharge Structures and Split Sampling

Rule 40E-63 requires each permittee to conduct total phosphorus field sampling under an approved Comprehensive Quality Assurance (QA) Plan. QA Plans are subject to approval by the Department of Environmental Protection and are to insure that correct laboratory and field sampling procedures are followed. Currently sixteen Comprehensive QA Plans are in use under this program. The SFWMD will conduct field sampling QA audits as a check of adherence to the approved QA sampling methodology. To date, no field sampling QA audits have been conducted. Field sampling QA audits are scheduled to be initiated during the May 95 - April 96 Water Year. The field sampling QA audits will be based on a standardized QA audit checklist developed through a review of the various QA plans in use under this program. The checklist was developed specifically for conducting QA field audits and considers that total phosphorus is the only parameter being sampled. The audit will review water quality sample collection methods, record keeping and sample quality control procedures at selected monitoring sites in the EAA.

The checklist for each audit conducted will summarize the audit and will indicate the audit result as "pass" or will specify areas needing improvement. If areas needing improvement are identified, the following procedures occur:

1) Notify the sampler and permittee of the areas.

2) Reschedule a follow-up audit within 30 days.

3) If the follow-up audit still indicates areas needing improvement, then the sampler is disallowed from further participation in the 40E-63 Program until the areas needing improvement are resolved.

The following table summarizes the number of QA audits passed or needing improvement between January 1, 1993 and April 30, 1995.

Table 9. Summary of Quality Assurance Audits

	Jan/93-Apr/93	May/93-Apr/94	May/94-Apr/95
No. QA Audits	0	0	0
No. Passed	0	0	0
No. Needing Improvement	0	0	0

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CHAPTER IV. DATA EVALUATION

The following illustrations (**Figures 7 through 12**) represent BMP implementations by permit basins. Although there are many BMP applications, they are represented in six major groups: basic fertilizer techniques, advanced fertilizer techniques, rainfall detention depth, sediment control techniques, urban practices and pasture management. The various practices under these major groups are listed.

This BMP information when analyzed with the phosphorus discharge data, soil types and rainfall patterns will contribute to the regulatory process in determining the effectiveness of each BMP group.

BASIN BMP: BASIC FERTILIZER
Calibrated Soil Test
Fertilizer Maintenance

Shaded area indicates
BMP implemented.

EAA Boundary
BASINS
BMP NOT IMPLEMENTED

N
W E
S

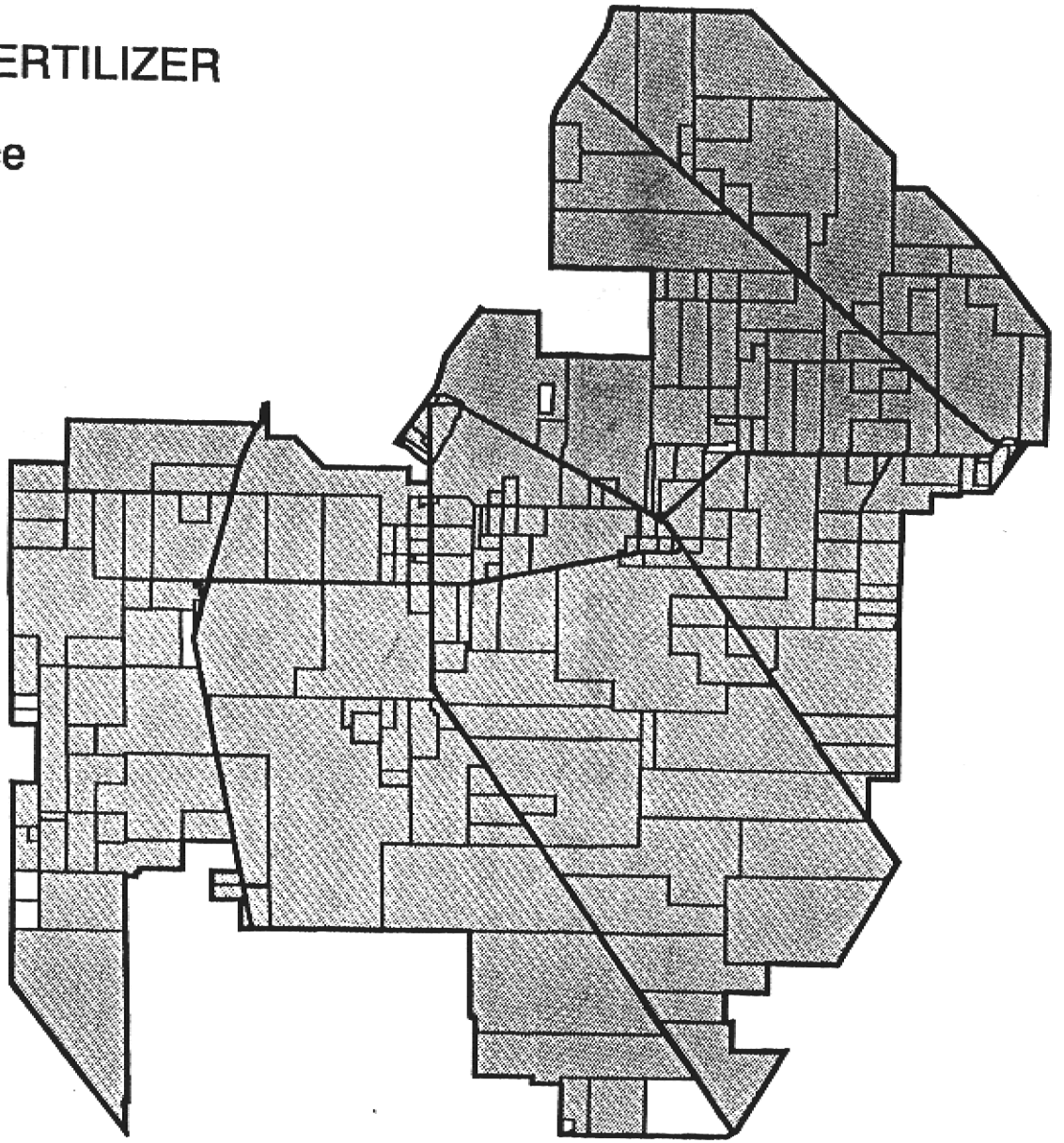


Figure 7. Basin BMP: Basic Fertilizer

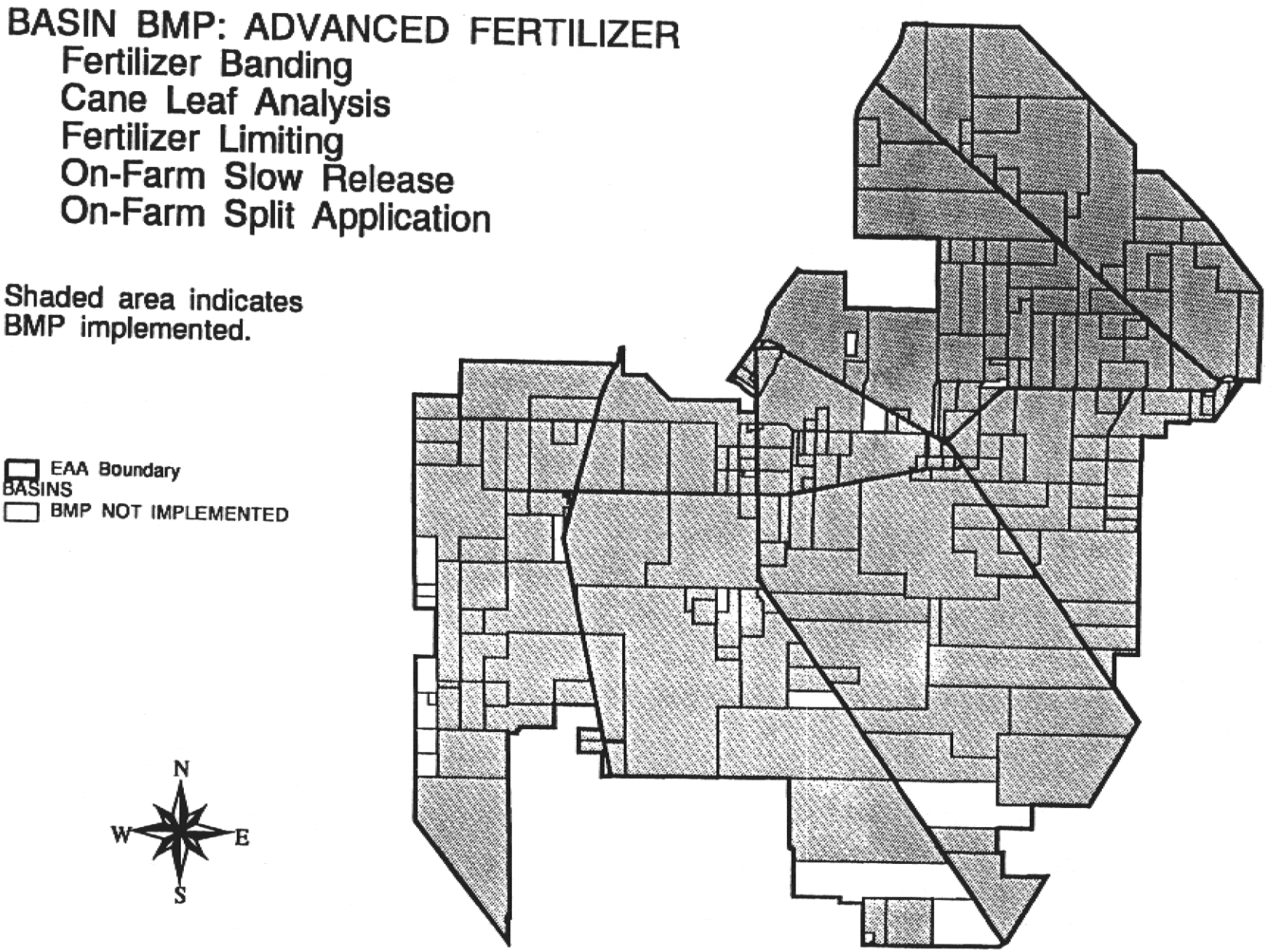


Figure 8. Basin BMP: Advanced Fertilizer

BASIN BMP: DETENTION

LOW (1/2"):
- On-Farm Detention
- Drainage District
- Vegetable On-Farm

MEDIUM (1"):
- On-Farm Detention
- Drainage District

HIGH (1 1/2" or more):
- On-Farm Detention
- Drainage District

EAA Boundary

BASIN DETENTION
- 1/2"
- 1"
- 1 1/2" or more

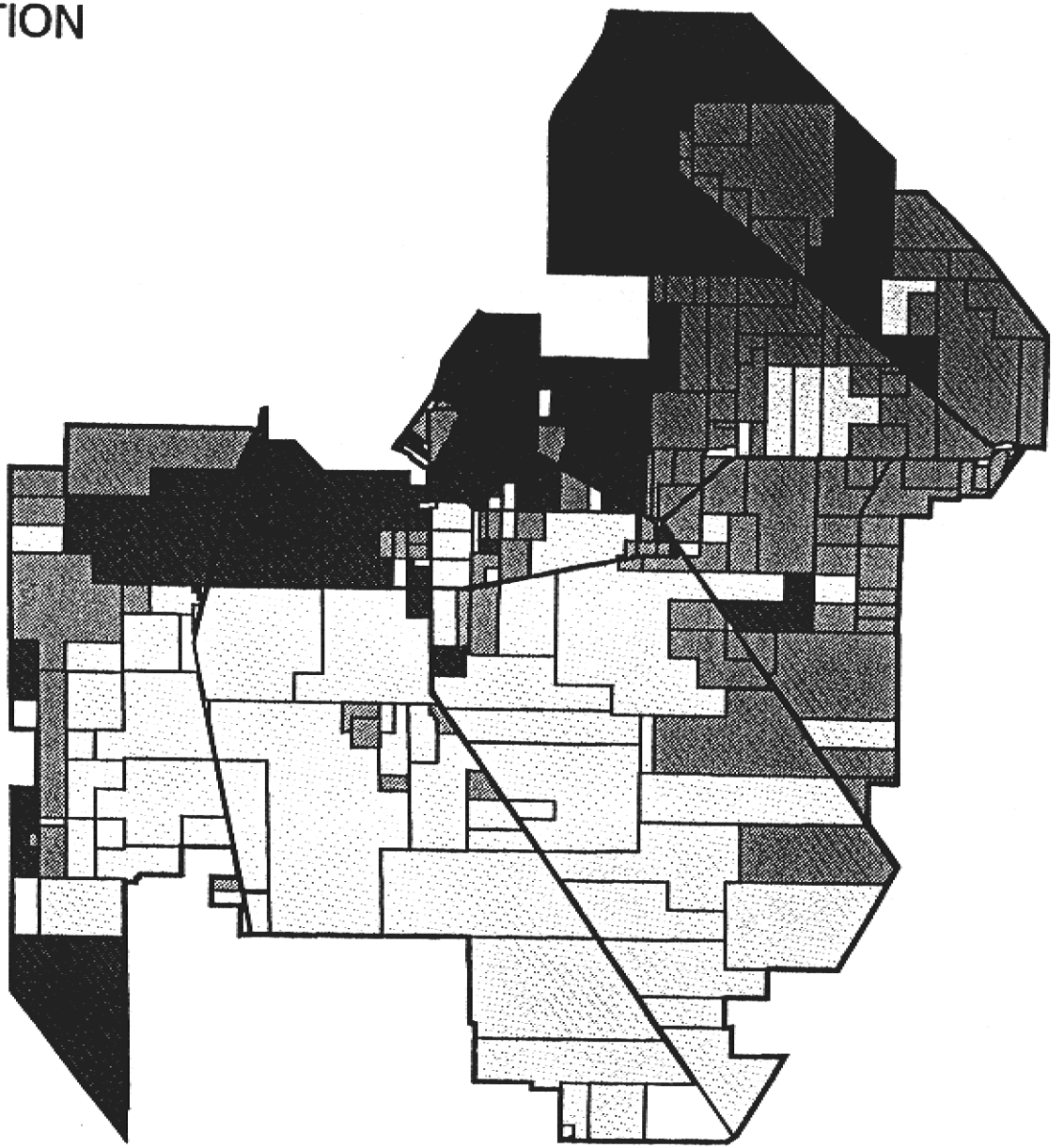


Figure 9. Basin BMP: Detention

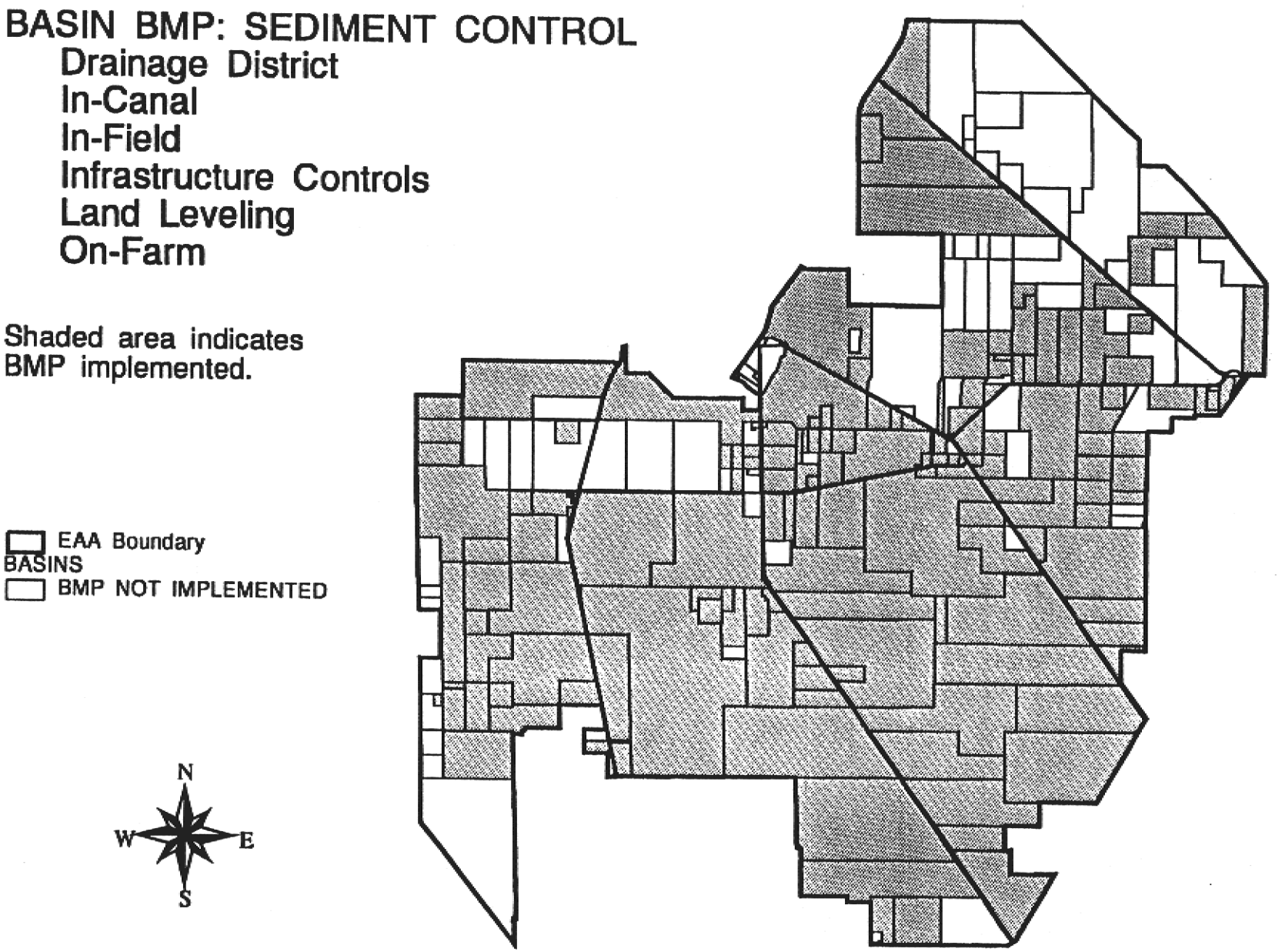


Figure 10. Basin BMP: Sediment Control

BASIN BMP: URBAN
Pond Littoral Zone
Urban NPDES
Xeriscape Vegetation

Shading within municipal boundaries indicates where BMP implemented.

Municipal Boundaries

BASINS

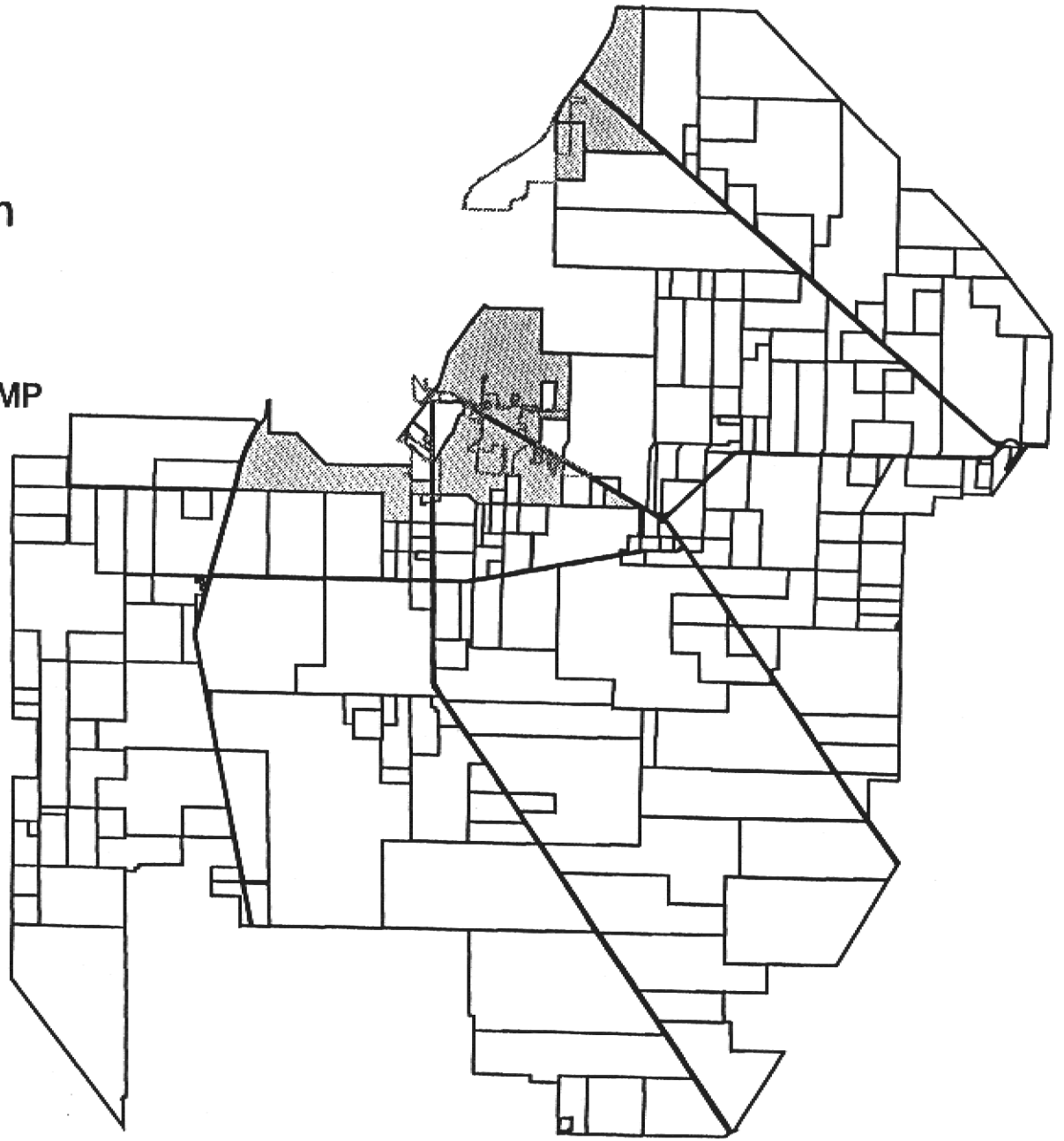


Figure 11. Basin BMP: Urban

BASIN BMP:
PASTURE MANAGEMENT

Shaded area indicates
BMP implemented.

EAA Boundary
BASINS
BMP NOT IMPLEMENTED

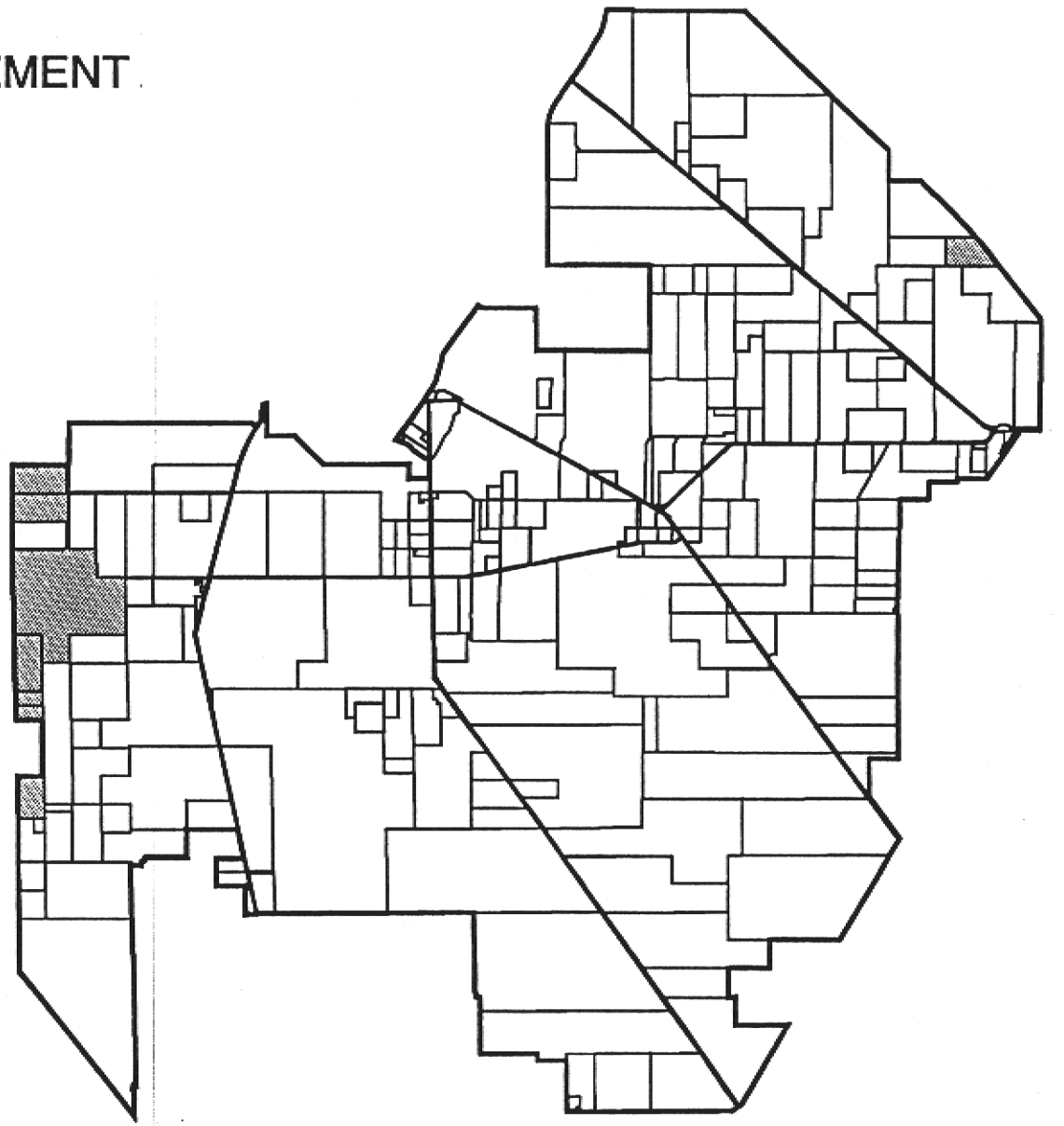


Figure 12. Basin BMP: Pasture Management

Total Phosphorus Concentrations and Loads -- Spatial Distribution

Total phosphorus concentration and load measurements collected during the on-farm water quality monitoring program has been summarized in this section. However, the reader should understand that since this is the first annual program report and the regulatory requirements of on-farm water quality monitoring were phased-in depending on permit application submission, permit issuance, and early & non-early baseline permit type, the data submitted from May 1, 1994 to April 30, 1995 (WY95) represents 46.3% of the acreage within the 40E-63 permit boundaries. Subsequent annual reports will allow examination of water quality data submitted for 100% of the permitted acreage.

Annual average flow-weighted total phosphorus concentrations (parts per billion, ppb) have been calculated from the data reported during Water Year 95 (WY95) [May 1, 1994 - April 30, 1995]. The concentrations, calculated on a permit boundary basis, covered a range from 38 ppb to 942 ppb, with a median value of 152 ppb. **Figure 13** presents a frequency distribution of WY95 concentrations.

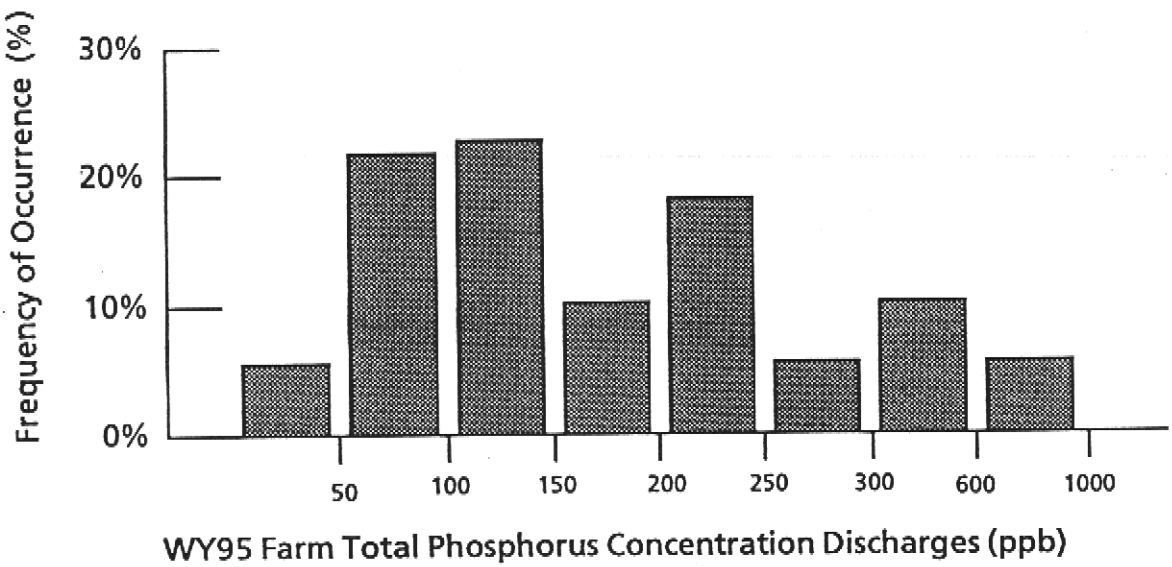


Figure 13. Frequency Distribution of WY 95 Farm Total Phosphorus Concentration Discharge

Annual average flow-weighted total phosphorus load discharges (pounds per acre, lbs/ac) have been calculated from the data reported during WY95. The loadings, calculated on a permit boundary basis, covered a range from 0.013 lbs/ac to over 13 lbs/ac with a median value of 1.04 lbs/ac. **Figure 14** presents a frequency distribution of WY95 loadings.

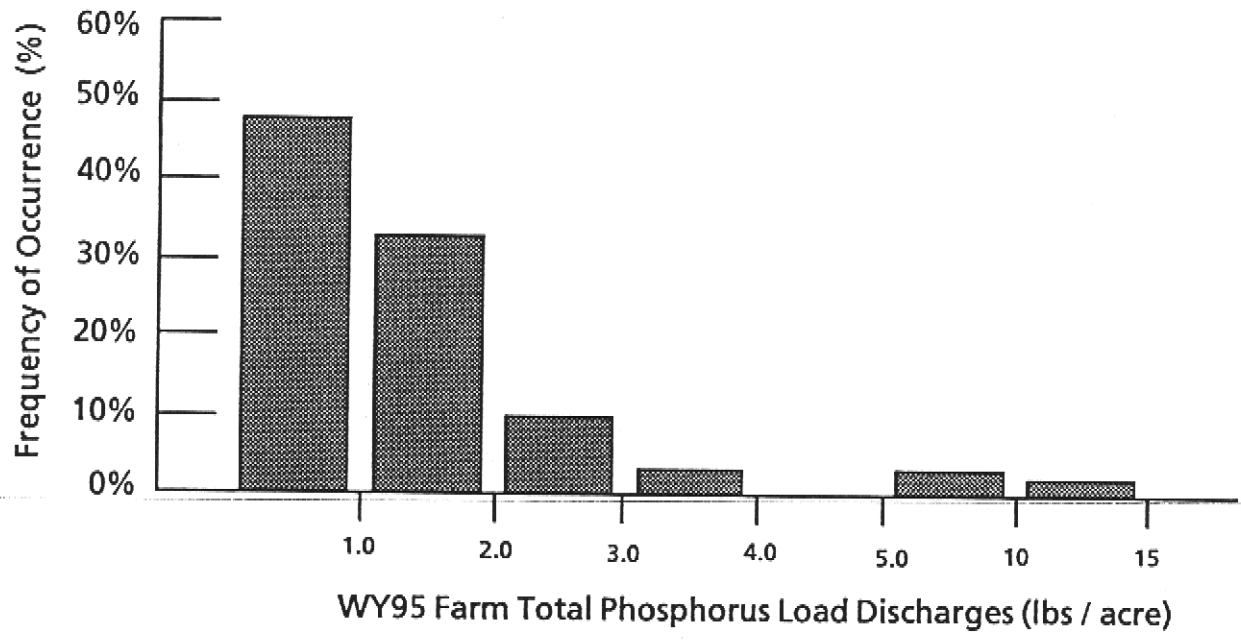


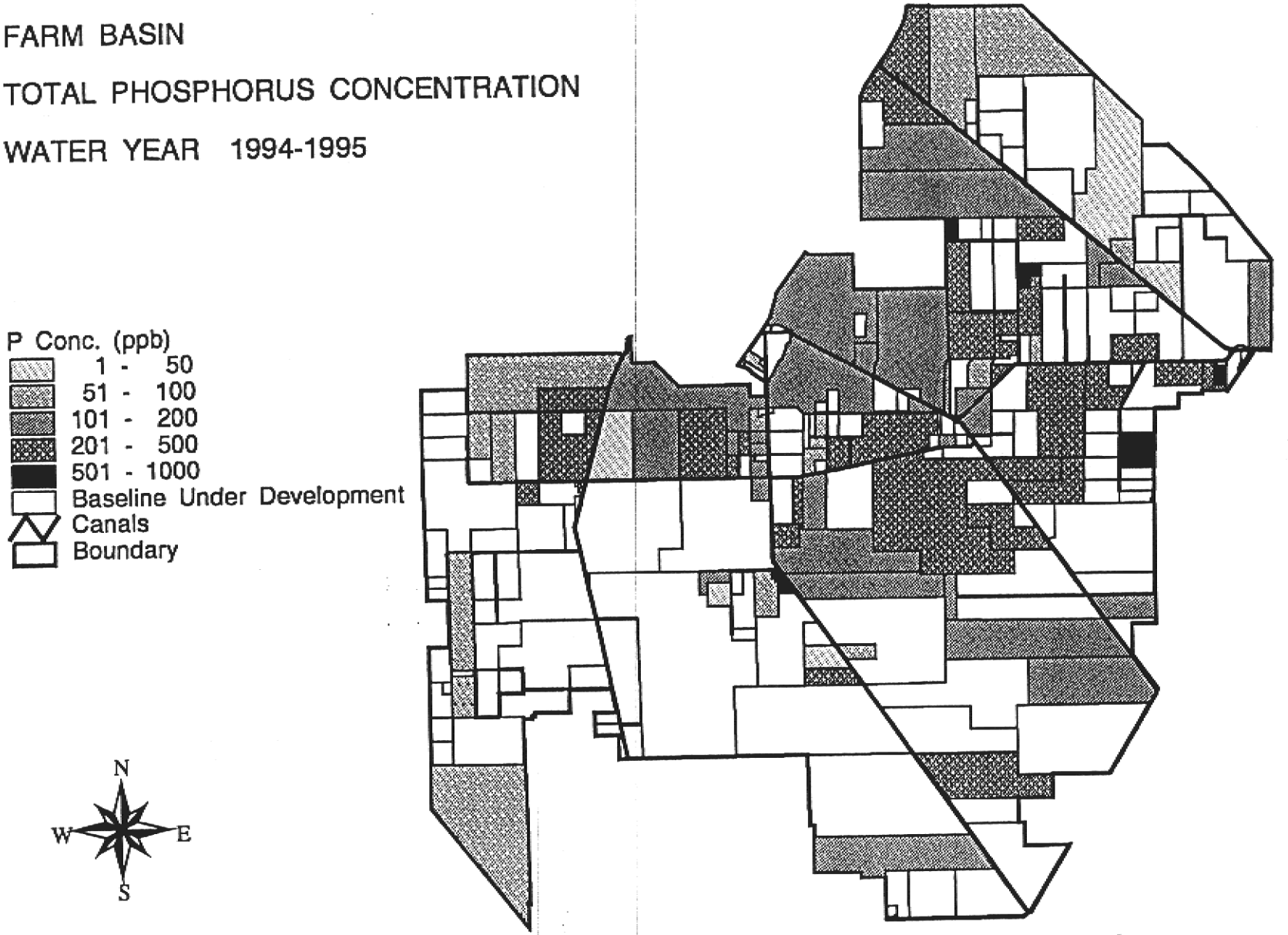
Figure 14. Frequency Distribution of WY95 Farm Total Phosphorus Load Discharge

Figures 15 and 16 graphically present the spatial distribution of phosphorus concentrations (parts per billion, ppb) and phosphorus load discharges (pounds per acre, lbs/ac) by permit. Examination of **Figures 15 and 16** do not provide any apparent spatial distribution patterns for the phosphorus concentration and load levels reported. In addition, there does not appear to be any consistent pattern of land use and reported phosphorus levels. However, as future water years are examined, patterns and correlations may become discernable. Appendices A - D list these data by farm basin.

FARM BASIN

TOTAL PHOSPHORUS CONCENTRATION

WATER YEAR 1994-1995



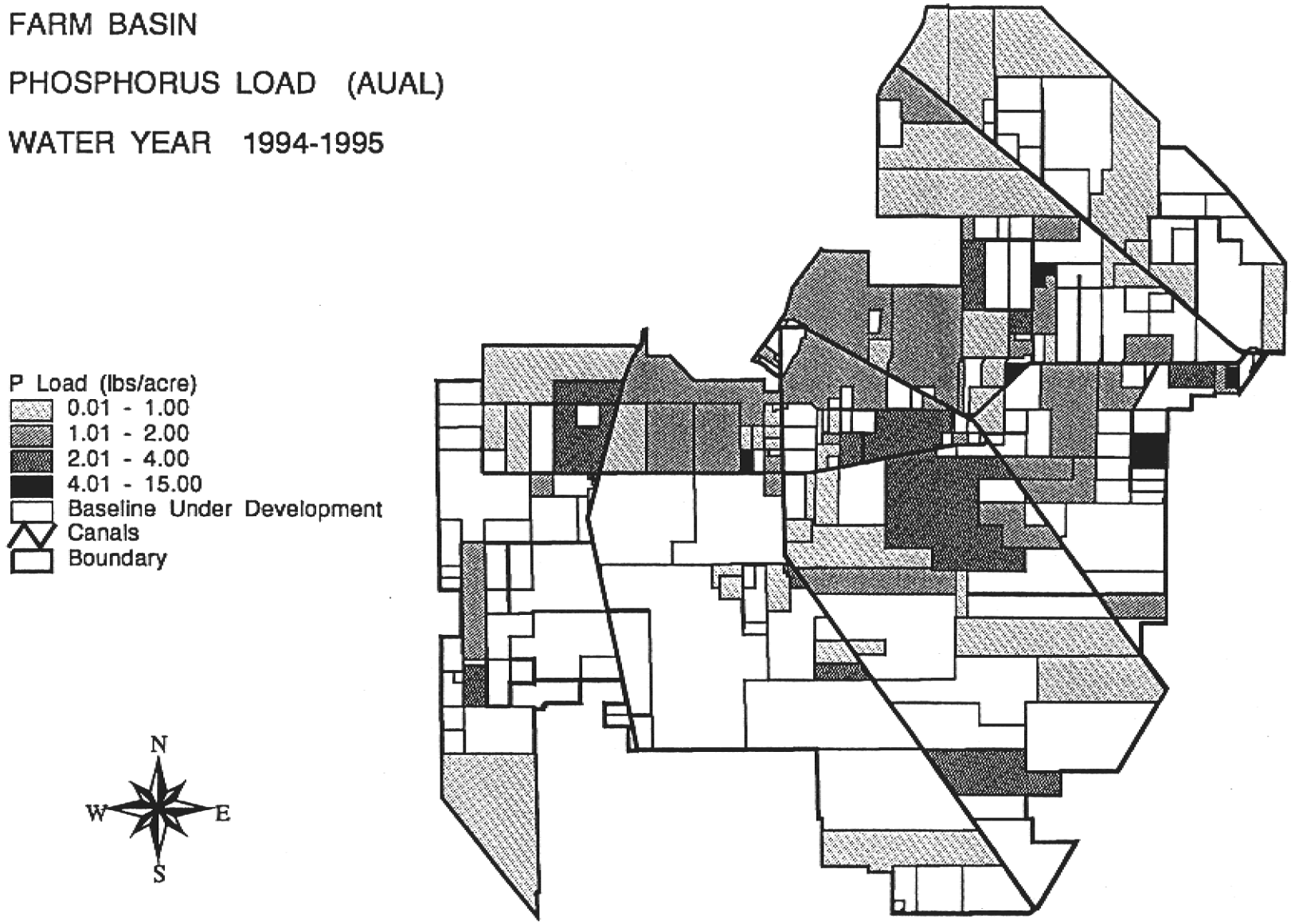


Figure 16. Farm Basin Phosphorus Load WY 95

Everglades Agricultural Area Soils -- Spatial Distribution

The following illustration (**Figure 17**) represents the major soil types found within the EAA. This information was gathered by the U.S. Department of Agriculture Soil Conservation Service incorporating the latest (1991) digitized version of the best available soil surveys of Palm Beach and Hendry counties at that time.

This information will aid regulation in determining the effect of soil types with all other parameters of this program (e.g. total phosphorus concentration, total phosphorus loads, BMPs, etc.).

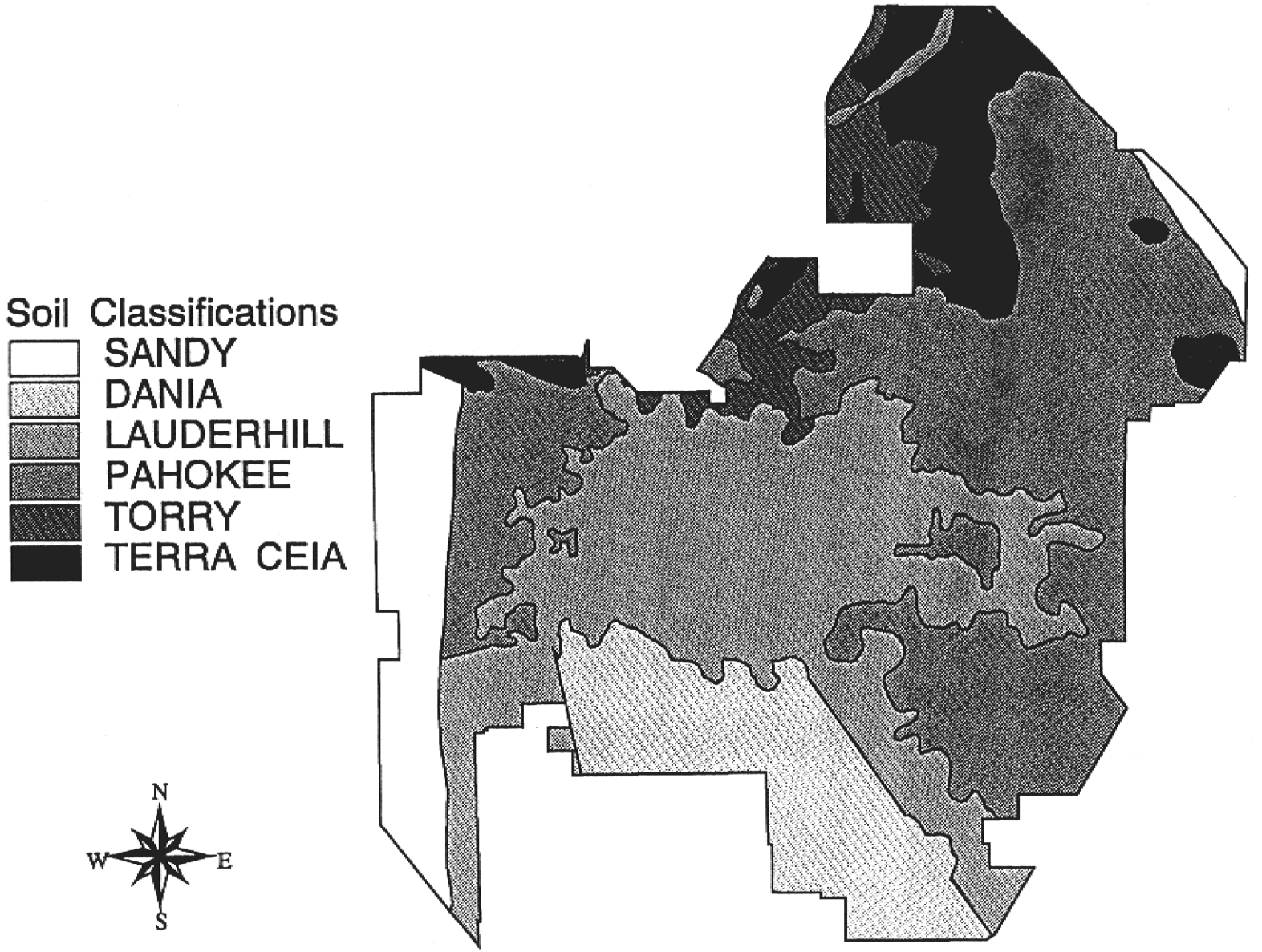


Figure 17. Soils within the EAA

Data Evaluation

As explained in earlier sections, the data presented in this annual report represents only a portion of all permits issued since the recent inception of the 40E-63 BMP program. The regulatory requirements of on-farm water quality monitoring were phased-in depending on permit application submission, permit issuance, and early & non-early baseline permit type. WY95 data represents only 46.3% of the acreage within the 40E-63 program. As such, any data evaluation conducted at this time would provide inconclusive and possibly misleading interpretations. However, subsequent annual reports will allow examination of water quality data submitted for 100% of the permitted acreage. Such attempts will be made to determine if any relationships are evident between:

Dependent Variables

- Permit Total Phosphorus Concentration
- Permit Total Phosphorus Loads

and

Independent Variables

- Land Use
  - Predominately Sugar Cane
  - Sugar Cane / Vegetable Mix
  - Predominately Vegetable
  - Predominately Sod
  - Predominately Pasture
  - Predominately Urban
  - Predominately Industrial
  - Other applicable combinations
- BMPs
  - Basic Fertilizer
  - Advanced Fertilizer
  - Detention
  - Sediment Control
  - Pasture Management
  - Urban BMPs
- General Soil Types (muck types and sand)
- Rainfall
- Rainfall/Runoff Ratios
- Spatial Location of Permit Areas
- Basin Size
- Basin Pump Capacity
- Other applicable variables

Relationships between total phosphorus concentrations & loads and the other variables listed above will be explored by utilizing standard multivariate statistical analysis techniques as well as GIS-based spatial examinations.

CHAPTER V. FUTURE CHALLENGES

Implementing successful regulatory programs is a massive undertaking. Meeting the goals of a regulatory program poses a variety of challenges, particularly in the areas or rule development, permit review, and post permit compliance. In addition to the mandated continuation of the 40E-63 Everglades Regulation Program for the EAA Basin, the Everglades Forever Act expanded responsibilities and mandated that new tasks be performed under Everglades Regulation. With these new responsibilities comes the challenge to provide ample staff and resources to develop and implement those programs.

Everglades Regulation Program -- EAA Basin

Continued assurance of permit compliance requires an active presence within the EAA by conducting on-site BMP inspections, water quality split sampling, and field sampling quality assurance audits. The availability and efficient use of staff will be paramount to adequately meet this responsibility. The next crucial deadline is the 12-month period from May 1995 to April 1996, at which time the SFWMD will determine if total phosphorus amounts in water leaving the EAA basin show at least a 25% reduction. If phosphorus from the entire EAA basin is not reduced, the SFWMD will then review the BMP programs implemented by individual growers and the on-farm water quality monitoring data to determine where improvements can be made.

The Everglades Forever Act has required that prior to January 1, 1997, Rule 40E-63 and the associated regulatory program shall be amended to incorporate the requirement to initiate a landowner sponsored research program to evaluate and develop BMPs for other water quality parameters. This rulemaking effort is currently underway.

Everglades Regulation Program -- C-139 Basin

The Everglades Forever Act mandates that the 163,000 acre C-139 Basin shall not discharge total phosphorus greater than the historic levels of 1979-1988. This basin compliance determination requires the SFWMD to develop a rule which specifies the calculation methods and the consequences to landowners if the historic total phosphorus levels are not met.

On August 11, 1994, the Governing Board authorized staff to initiate rule development for the C-139 Basin. A series of public workshops have been held in Immokalee, Clewiston, and West Palm Beach since September, 1994. These rule development meetings between SFWMD Regulation staff and landowners have covered topics such as the Everglades Forever Act mandates, schedules, BMP regulatory concept, basin compliance modeling, BMPs, and water quality monitoring. The rule and subsequent C-139 Regulatory Program is expected to be completed and implemented during 1996.

Chapter 40E-61, F.A.C., required lands within the Lake Okeechobee special drainage districts to demonstrate, through reasonable assurance, that a reduction of total phosphorus discharged to Lake Okeechobee. The rule required the SFWMD to make a determination if the permittee has demonstrated at least 10 metric ton total phosphorus reduction by July 1, 1993.

During FY94, SFWMD staff have reviewed all data and information submitted on BMPs within the regulated boundaries. In addition, SFWMD staff have conducted field investigations and verification of implemented BMPs. During July, 1994, SFWMD staff concluded that the 10-ton total phosphorus reductions had been demonstrated through reasonable assurance. Subsequent to the July 1994 determination, regulation staff are continuing to monitor the implementation of BMPs and evaluate the water quality data submitted by the permittees.

The Everglades Forever Act has required that prior to January 16, 1997, Chapter 40E-61, F.A.C., and associated regulatory program shall be amended to require the initiation of a landowner sponsored research program to evaluate and develop BMPs for other water quality parameters. This rulemaking effort is currently underway.

Everglades Regulation Program – Lower Western Basins

The Everglades Forever Act requires the SFWMD to obtain a permit from the Florida Department of Environmental Protection (DEP) for the operation of SFWMD water control structures, canals, and conveyance system. As part of that permit, the SFWMD must provide reasonable assurance that State water quality standards will be met. Reasonable assurance is provided by establishing a strategy to control water quality. One strategy presently being considered for the Lower Western Basins is the development of a BMP regulatory program.

Although the initiation of rulemaking to develop a regulatory permitting program for the lower western basins may be years away, several preliminary activities have been conducted in FY94. SFWMD staff have met several times with various basin landowners: Seminole Tribe of Florida, Miccosukee Tribe of Indians of Florida, McDaniel, Inc., and others to discuss the water quality issues of concern to each party. In addition, SFWMD staff met with DEP to discuss the state controlled program of land applying treated domestic wastewater sludge within this basin.

Efforts will focus on the strategy development for this Everglades tributary. Staff will organize existing information received from the various landowners, water quality data, and hydrological data available. Rule development is expected to be initiated in the near future.

APPENDICES

APPENDIX A
Early Baseline Permits -- Basin ID Reference Table

Appendix A: Early Baseline Permits -- Basin ID Reference Table

Unit Area ID	Basin ID	Permit #	Structure I.D.
166	50-002-01	50-00002-E	WP15.3TS
165	50-002-02	50-00002-E	WP12.1TS
047	50-003-01	50-00003-E	NR23.2TW
040	50-003-02	50-00003-E	NR18.2TW05
152	50-004-01	50-00004-E	WP07.4TS
039	50-005-01	50-00005-E	NR18.2TW06
			NR18.2TW10
050	50-005-02	50-00005-E	NR24.2TW
048	50-005-03	50-00005-E	BC10.2TN02
037	50-005-04	50-00005-E	NR18.2TW01
011	50-005-05	50-00005-E	BC19.2TS
078	50-005-06	50-00005-E	BC07.8TS
134	50-006-01	50-00006-E	OC08.7TN
143	50-006-02	50-00006-E	HC15.2TN
141	50-006-03	50-00006-E	OC11.7TN
			OC12.5TN
063	50-007-01	50-00007-E	HC00.7TS
116	50-007-02	50-00007-E	OC07.6TS
122	50-007-03	50-00007-E	OC02.6TS
020	50-008-01	50-00008-E	MC24.1TW
024	50-009-01	50-00009-E	NR02.7TW
			NR03.0TW
060	50-009-02	50-00009-E	NR06.6TE
			NR07.8TE
030	50-009-03	50-00009-E	NR12.4TW
			NR12.5TW
			NR13.0TW
102	50-010-02	50-00010-E	HC15.5TS
			HC19.6TS
			NR26.4TE
055	50-010-03	50-00010-E	MC24.1TE
			NR25.2TW
148	50-010-04	50-00010-E	HC19.7TN
			HC22.5TN
112	50-011-01	50-00011-E	HC11.8TN

Appendix A: Early Baseline Permits -- Basin ID Reference Table

Unit Area ID	Basin ID	Permit #	Structure I.D.
075	50-011-03	50-00011-E	BC02.4TS HC07.6TS HC11.8TS
089	50-011-04	50-00011-E	BC02.9TN BC04.5TN BC04.6TN BC05.0TN HC15.4TS
120	50-012-01	50-00012-E	HC14.2TN OC11.8TS
114	50-013-01	50-00013-E	OC04.1TS04 OC04.1TS05 OC04.1TS06
077	50-014-01	50-00014-E	BC06.5TS BC07.0TS
188	50-015-01	50-00015-E	WP19.3TN
168	50-015-02	50-00015-E	WP18.4TS
129	50-016-01	50-00016-E	OC04.5TN
091	50-017-01	50-00017-E	BC06.0TN BC06.5TN01
187	50-018-01	50-00018-E	WP17.9TN
186	50-018-02	50-00018-E	WP15.4TN02
179	50-018-03	50-00018-E	WP09.1TN
015	50-018-04	50-00018-E	BC19.7TS01 L104.1TS
014	50-018-06	50-00018-E	L105.1TS
005	50-018-07	50-00018-E	MC10.7TW01 MC10.7TW02
006	50-018-08	50-00018-E	MC10.7TW03 MC10.7TW04 MC10.7TW05
019	50-018-09	50-00018-E	MC23.3TW
145	50-018-10	50-00018-E	HC17.4TN
159	50-018-11	50-00018-E	OC09.5TN12
172	50-018-12	50-00018-E	WP04.8TN
178	50-018-13	50-00018-E	WP07.5TN
056	50-018-14	50-00018-E	NR26.7TW

Appendix A: Early Baseline Permits -- Basin ID Reference Table

Unit Area ID	Basin ID	Permit #	Structure I.D.
079	50-018-15	50-00018-E	NR19.7TE
095	50-018-16	50-00018-E	BC06.5TN02
043	50-018-17	50-00018-E	BC09.3TS
051	50-018-18	50-00018-E	NR24.6TW
046	50-018-19	50-00018-E	BC10.5TN
044	50-018-20	50-00018-E	BC09.2TN
001	50-018-21	50-00018-E	L406.6TN
017	50-018-22	50-00018-E	MC21.5TW
054	50-018-23	50-00018-E	MC23.0TE
053	50-018-24	50-00018-E	BC13.7TN
052	50-018-25	50-00018-E	BC11.7TN
067	50-019-01	50-00019-E	NR14.2TE
036	50-019-02	50-00019-E	NR18.2TW02
031	50-019-03	50-00019-E	NR13.6TW
164	50-020-01	50-00020-E	OC09.5TN23
111	50-021-01	50-00021-E	HC10.0TN HC10.6TN
049	50-022-01	50-00022-E	BC10.2TN03
139	50-023-01	50-00023-E	OC10.3TN
153	50-025-01	50-00025-E	WP08.7TS
124	50-026-01	50-00026-E	OC01.1TS
072	50-027-01	50-00027-E	HC08.8TS
140	50-027-02	50-00027-E	OC11.1TN
147	50-027-03	50-00027-E	HC18.6TN HC19.1TN
144	50-027-04	50-00027-E	OC09.5TN11 OC09.5TN13
086	50-028-01	50-00028-E	BC01.2TN
094	50-029-01	50-00029-E	BC07.0TN
156	50-030-01	50-00030-E	OC09.5TN15 OC09.5TN16
107	50-031-01	50-00031-E	HC04.5TN
150	50-031-02	50-00031-E	OC09.5TN07
151	50-031-03	50-00031-E	OC09.5TN06 OC09.5TN08
096	50-032-01	50-00032-E	BC06.5TN04
167	50-033-01	50-00033-E	WP16.8TS

Appendix A: Early Baseline Permits -- Basin ID Reference Table

Unit Area ID	Basin ID	Permit #	Structure I.D.
065	50-034-01	50-00034-E	HC02.7TS
069	50-034-02	50-00034-E	HC05.2TS01
070	50-034-03	50-00034-E	NR16.9TE
071	50-034-04	50-00034-E	NR18.7TE
			NR19.2TE
137	50-035-01	50-00035-E	OC09.5TN02
			OC09.5TN03
115	50-035-02	50-00035-E	OC04.1TS01
			OC04.1TS02
123	50-036-01	50-00036-E	OC01.3TS
169	50-037-01	50-00037-E	WP00.7TN
160	50-038-01	50-00038-E	WP10.6TS
056	50-046-01	50-00046-E	NR26.7TW-A

APPENDIX B
Early Baseline Permits Phosphorus Data
(5/1/94 - 4/30/95)

Appendix B: Early Baseline Permits Phosphorus Data (5/1/94 - 4/30/95)

Unit Area ID	Basin ID	Annual TP Concentration ppb	AUAL lbs/acre	% TP Reduction
166	50-002-01	196	0.83	74%
165	50-002-02	130	0.60	79%
047	50-003-01	197	0.20	51%
040	50-003-02	140	0.18	72%
152	50-004-01	169	0.73	80%
039	50-005-01	44	0.13	86%
050	50-005-02	112	0.17	-175%
048	50-005-03	267	0.23	11%
037	50-005-04	850	3.04	-104%
011	50-005-05	220	1.17	40%
078	50-005-06	230	0.91	42%
134	50-006-01	84	0.53	88%
143	50-006-02	135	1.11	80%
141	50-006-03	128	1.00	72%
063	50-007-01	133	0.75	52%
116	50-007-02	276	1.93	87%
122	50-007-03	348	2.11	64%
020	50-008-01	86	0.33	3%
024	50-009-01	110	0.54	53%
060	50-009-02	208	2.05	43%
030	50-009-03	311	2.77	34%
102	50-010-02	181	1.13	40%
055	50-010-03	122	1.06	19%
148	50-010-04	186	1.31	73%
112	50-011-01	273	1.81	34%
075	50-011-03	490	3.38	42%

Appendix B: Early Baseline Permits Phosphorus Data (5/1/94 - 4/30/95)

Unit Area ID	Basin ID	Annual TP Concentration ppb	AUAL lbs/acre	% TP Reduction
089	50-011-04	220	2.23	57%
120	50-012-01	118	0.80	80%
114	50-013-01	628	8.31	66%
077	50-014-01	124	0.31	77%
188	50-015-01	204	0.69	74%
168	50-015-02	418	1.25	76%
129	50-016-01	217	1.90	87%
091	50-017-01	207	2.44	24%
187	50-018-01	94	0.45	84%
186	50-018-02	61	0.32	91%
179	50-018-03	50	0.39	80%
015	50-018-04	63	0.89	77%
014	50-018-06	66	0.65	56%
005	50-018-07	65	2.01	47%
006	50-018-08	64	1.31	42%
019	50-018-09	227	2.01	52%
145	50-018-10	158	1.01	67%
159	50-018-11	245	3.63	82%
172	50-018-12	49	0.50	72%
178	50-018-13	74	0.43	-8%
056	50-018-14	79	1.42	38%
079	50-018-15	233	0.58	48%
095	50-018-16	65	1.25	70%
043	50-018-17	145	1.29	58%
051	50-018-18	51	0.30	53%
046	50-018-19	362	12.57	64%

Appendix B: Early Baseline Permits Phosphorus Data (5/1/94 - 4/30/95)

Unit Area ID	Basin ID	Annual TP Concentration ppb	AUAL lbs/acre	% TP Reduction
044	50-018-20	130	1.75	51%
001	50-018-21	52	0.46	-838%
017	50-018-22	311	2.90	69%
054	50-018-23	49	0.45	80%
053	50-018-24	122	1.13	43%
052	50-018-25	291	1.52	70%
067	50-019-01	79	0.89	42%
036	50-019-02	67	0.38	72%
031	50-019-03	38	0.22	63%
164	50-020-01	942	1.73	48%
111	50-021-01	239	1.84	79%
049	50-022-01	105	0.13	84%
139	50-023-01	450	5.71	52%
153	50-025-01	125	0.59	84%
124	50-026-01	777	13.21	74%
072	50-027-01	219	1.23	49%
140	50-027-02	94	0.43	65%
147	50-027-03	169	0.41	82%
144	50-027-04	341	0.88	58%
086	50-028-01	101	1.07	93%
094	50-029-01	73	0.67	73%
156	50-030-01	639	5.24	63%
107	50-031-01	111	1.60	37%
150	50-031-02	233	1.51	72%
151	50-031-03	235	2.03	76%
096	50-032-01	58	0.38	56%

Appendix B: Early Baseline Permits Phosphorus Data (5/1/94 - 4/30/95)

Unit Area ID	Basin ID	Annual TP Concentration ppb	AUAL lbs/acre	% TP Reduction
167	50-033-01	<75% annual load sampled (69%)		
065	50-034-01	110	0.94	44%
069	50-034-02	101	0.53	84%
070	50-034-03	178	1.05	74%
071	50-034-04	117	0.51	67%
137	50-035-01	201	1.29	78%
115	50-035-02	313	1.87	65%
123	50-036-01	245	1.61	13%
169	50-037-01	165	0.61	91%
160	50-038-01	290	1.02	73%
056	50-046-01	79	1.42	38%

APPENDIX C
Ranking of Farm-Level TP Concentration Data
(5/1/94 - 4/30/95)

Appendix C: Ranking of Farm-Level TP Concentration Data (5/1/94 - 4/30/95)

Unit Area ID	Basin ID	Annual TP Concentration ppb
031	50-019-03	38
039	50-005-01	44
054	50-018-23	49
172	50-018-12	49
179	50-018-03	50
051	50-018-18	51
001	50-018-21	52
096	50-032-01	58
186	50-018-02	61
015	50-018-04	63
006	50-018-08	64
005	50-018-07	65
095	50-018-16	65
014	50-018-06	66
036	50-019-02	67
094	50-029-01	73
178	50-018-13	74
067	50-019-01	79
056	50-046-01	79
056	50-018-14	79
134	50-006-01	84
020	50-008-01	86
187	50-018-01	94
140	50-027-02	94
069	50-034-02	101
086	50-028-01	101
049	50-022-01	105
065	50-034-01	110
024	50-009-01	110

Unit Area ID	Basin ID	Annual TP Concentration ppb
107	50-031-01	111
050	50-005-02	112
071	50-034-04	117
120	50-012-01	118
055	50-010-03	122
053	50-018-24	122
077	50-014-01	124
153	50-025-01	125
141	50-006-03	128
044	50-018-20	130
165	50-002-02	130
063	50-007-01	133
143	50-006-02	135
040	50-003-02	140
043	50-018-17	145
145	50-018-10	158
169	50-037-01	165
152	50-004-01	169
147	50-027-03	169
070	50-034-03	178
102	50-010-02	181
148	50-010-04	186
166	50-002-01	196
047	50-003-01	197
137	50-035-01	201
188	50-015-01	204
091	50-017-01	207
060	50-009-02	208
129	50-016-01	217

Appendix C: Ranking of Farm-Level TP Concentration Data (5/1/94 - 4/30/95)

Unit Area ID	Basin ID	Annual TP Concentration ppb
072	50-027-01	219
011	50-005-05	220
089	50-011-04	220
019	50-018-09	227
078	50-005-06	230
150	50-031-02	233
079	50-018-15	233
151	50-031-03	235
111	50-021-01	239
123	50-036-01	245
159	50-018-11	245
048	50-005-03	267
112	50-011-01	273
116	50-007-02	276
160	50-038-01	290
167	50-033-01	<75% annual load sampled (69%)
052	50-018-25	291
017	50-018-22	311
030	50-009-03	311
115	50-035-02	313
144	50-027-04	341
122	50-007-03	348
046	50-018-19	362
168	50-015-02	418
139	50-023-01	450
075	50-011-03	490
114	50-013-01	628
156	50-030-01	639
124	50-026-01	777
037	50-005-04	850
164	50-020-01	942

APPENDIX D
Ranking of Farm-Level TP Load Data
(5/1/94 - 4/30/95)

Appendix D: Ranking of Farm-Level TP Load Data (5/1/94 - 4/30/95)

Unit Area ID	Basin ID	AUAL lbs/acre
056	50-046-01	1.42
056	50-018-14	1.42
150	50-031-02	1.51
052	50-018-25	1.52
107	50-031-01	1.60
123	50-036-01	1.61
164	50-020-01	1.73
044	50-018-20	1.75
112	50-011-01	1.81
111	50-021-01	1.84
115	50-035-02	1.87
129	50-016-01	1.90
116	50-007-02	1.93
005	50-018-07	2.01
019	50-018-09	2.01
151	50-031-03	2.03
060	50-009-02	2.05
122	50-007-03	2.11
089	50-011-04	2.23
091	50-017-01	2.44
030	50-009-03	2.77
017	50-018-22	2.90
037	50-005-04	3.04
075	50-011-03	3.38
159	50-018-11	3.63
156	50-030-01	5.24
139	50-023-01	5.71
114	50-013-01	8.31
046	50-018-19	12.57
124	50-026-01	13.21
167	50-033-01	<75% annual load sampled (69%)

FOR ADDITIONAL INFORMATION ON THE EVERGLADES REGULATORY PROGRAMS, CONTACT:

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